The OIL WEEKLY

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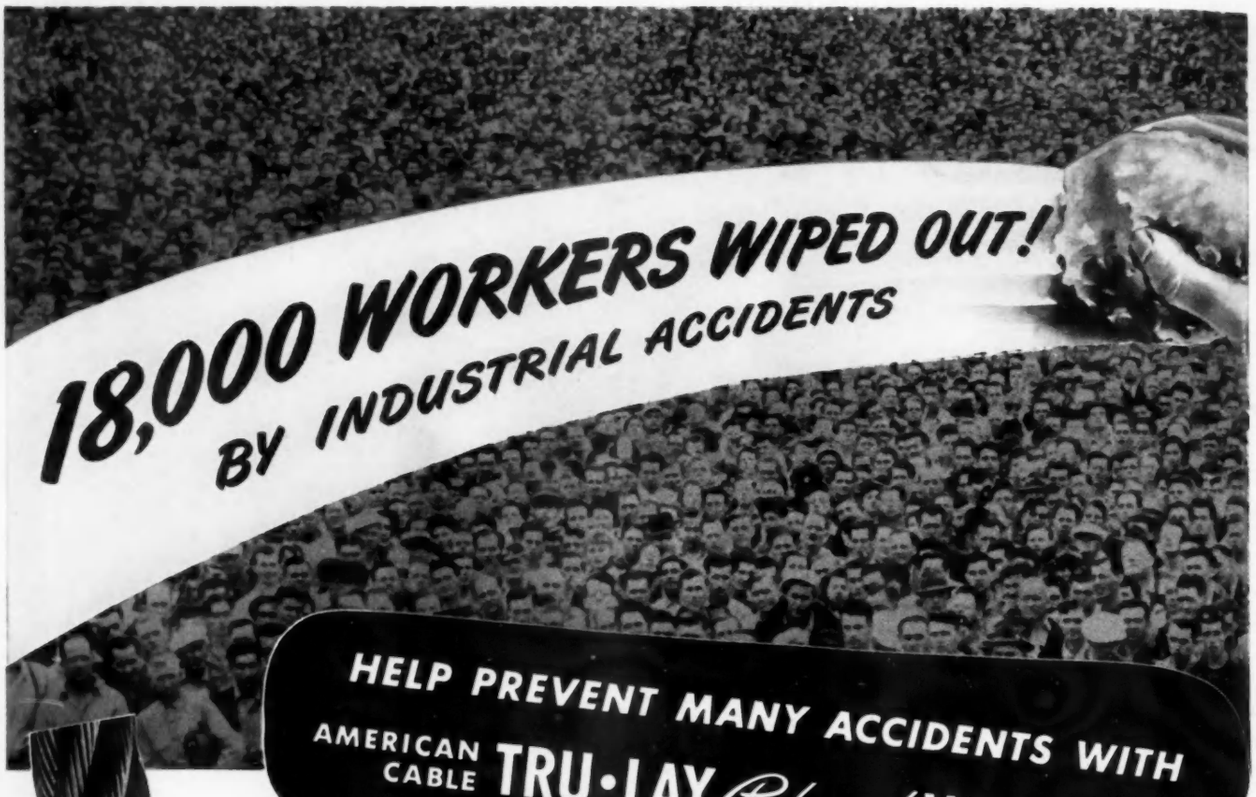

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The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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Contents • July 5, 1943

Volume 110, No. 5

The Changing Panorama..... 9

Technical and Feature Section:

Oil Industry and Oil Workers Highly Essential to the War.....11
By L. J. LOGAN

Gas-Lift Unit Driven by Wire Extension from Another Well.....16
By C. A. McGILL

Crude-Oil Prices and Conservation.....17
By JOHN D. GILL

Factors Necessary for Consideration in Planning a Secondary-Recovery Development.....19

Practical Operating Hints for the Drilling Rig.....36

News and Departments:

Looking Ahead with the Editor..... 7
Washington Roundup.....39
Markets, Statistics and Prices.....45
U. S. Field Operations.....51
United States Well Completions.....57
United States Wildcat Starts.....61
Squeaks from the Bull Wheel.....62
Notes for the Equipment Buyer and User.....63
Men in the Industry's News.....64
Index to Advertisers.....64

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LOOKING AHEAD

. . . with the Editor

MORE oil producing properties have changed hands during the past 12 months than during any similar period of the past decade. There appears to be a greater inclination on the part of independent or small operators to dispose of their producing properties, and more willingness on the part of large concerns to purchase.

What are the reasons for this current flurry of property sales? A survey of conditions leads to the conclusion that there are a number of factors why small operators are getting out of the business and why major concerns are willing to buy properties. Conditions causing this situation will be discussed in an article that will be published next week.

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The Changing Panorama

Not How Much—But Where

ANY consideration of how much crude oil the United States can produce without physical waste should involve the highly important question of transportation, if the consideration is to have practical worth during this emergency.

This is just another way of saying that if reserve figures or figures on the ability of a pool to produce actually mean anything now-a-days, we also must know how much of that particular oil can be moved to market under present conditions. This is such elementary reasoning that one would think that anybody familiar with the oil industry would keep it in mind. But in this emergency the oil industry finds itself dealing with many people who are not acquainted with the elementary phases of the oil industry, men who cannot understand why we could have a feast out in the field and a famine at the refinery.

Recent studies made on the "availability of crude oil" showed that production could be boosted materially in some sections, but when the investigators looked into the question of whether or not the increased quantities of oil could be moved to refineries capable of handling the oil, it was found that field storage, pipe-line facilities and refining facilities to handle the crudes produced in some of those areas greatly restricted the amount of crude oil which could actually be utilized from the areas in question.

In ordinary times, when pipe and tankage were available to whoever could pay for them, when refining facilities could be fairly quickly revamped to handle the crude, such oil would find a reasonably prompt market. We have in mind an instance a few years ago when the purchase of a large producing property by an integrated company required the expenditure of several millions of dollars to revamp refining facilities of that company to use the new crude. Such a procedure at this time would be hampered, if not made impossible by the present shortage of materials.

All of which means that reserve figures by pools can be very misleading to the public.

☆

Wanted—Foreign Oil Policy

A CONSISTENT United States foreign policy on petroleum, taking into consideration all of the factors involved, the competition of foreign oil with domestic oil, our probable future need for importations, the position of the American investor abroad, the best interests of the foreign countries involved and the genuine stake which the American citizen has in all of these matters, is needed and there is no better time than right now for us to be thinking of it.

American citizens, most of whom own or use automobiles, have a real stake in an intelligent and consistent foreign oil policy. They have a greater stake than they realize, and peculiarly enough events are shaping themselves to the point where it is becoming more apparent that there should be no conflict between their interests and the interests of the domestic producers.

Some study is now being applied to this problem and with the need so apparent to anyone who studies it, something should come of these studies.

As we indicated in an article several weeks ago, foreign countries also have a stake in the development of their resources under conditions which mean prosperity and stability.

A well-thought-out foreign policy on petroleum on the part of the United States, a policy based on a guarantee of fairness on the part of both oil company and foreign government would be a boon to all concerned.

Speaking of Unity

WE HEAR a great deal these days about the imperative need for unity among American citizens, and certainly any sensible person knows that we do need unity.

But what is unity?

Is it simply giving way to the demands of the minority? Is a person promoting disunity when he expresses the belief that unity means more than surrender?

We have an example before us right now. President Roosevelt has been strong for unity among American people and his close associates have been preaching it day by day. Labor leaders, in the interest of unity, have pledged themselves to a no-strike policy on war work. In some they have not been able to make good on that pledge. The daily papers carry plenty of evidence of the truth of the foregoing statement.

But when the House of Representatives and the Senate, by overwhelming majorities, passed a bill which the bulk of patriotic citizens feel is advisable, during war times, to keep our production lines moving, the President vetoed it. Is that unity?

Oil's Equipment Outlook Critical

THE amount of steel allocated to the oil industry for use during the third quarter of the year, and the quota likely to be given the industry for the fourth quarter, is considerably below the minimum requirements nominated by PAW.

This situation, and because the industry has used up its surplus stocks during the past year, makes the outlook for sufficient equipment to carry on minimum operations very critical.

The industry is faced with two possible solutions or plans for attack. One is to increase the efficiency of field operations, through joint use of facili-

ties and reclamation of units that can do a bigger job if moved to another well or used elsewhere. A program of this nature is being worked out by PAW Joint Use and Reclamation Committees. However, the task is exceptionally difficult, involving much detail, and evaluation work. If it is to succeed the committees must receive cooperation from all operators. The other course that the industry should take is to better educate the public and governing agencies as to the importance of oil and the true picture of oil from a military standpoint. With better appreciation of the significance of oil, and what a shortage would mean to the war effort, the industry would have a much better chance of getting the most steel that could be allocated to it under existing circumstances.

Balance of Ore Power

AS PART of an analysis of the Brookings Institution publication, "World Minerals and World Peace," the Industrial Bulletin of Arthur D. Little, Inc., gives this summary and estimate of change in mineral control as thus far established in World War II.

"Although the output of ores, coal and crude oil actually available to the United Nations is still enormously greater than that available to the Axis powers, the latter have made serious inroads into United Nations supplies. At the end of 1939 the Axis powers controlled only 11 percent of the world's mineral output but by the end of 1942 they held areas that altogether had accounted for 25 percent of the 1939 total. If the Axis powers are given time to consolidate these gains and to expand production where possible, they may be in a position to prolong the war for a considerable time in the hope for a stalemate ending with a negotiated armistice. Such a stalemate, although leaving the United Nations with a considerable advantage in mineral production, would also leave them with actual deficiencies in several important minerals and with much less than complete control in many others. There would then be an uneasy balance of mineral power, and at best this could mean an uneasy peace. Since the Germans are bent on world control, a stalemate would only postpone the ultimate decision. For the United Nations to have effective control over world mineral resources, therefore, the Axis powers must be thoroughly defeated into unconditional surrender."

Low Crude Prices Retard Bank Loans

BANKS, which once did a thriving business in oil loans, today, because of the prevailing low price for crude oil, are in the awkward position of having money which they are eager to loan, but no one to whom to loan it.

Operators wish to get loans for exploration and development, but are not asking for loans because the chances of operating at a loss are too great due to the low crude price. Thus the operator would be unable to repay the loan.

Meanwhile, banks are faced with this problem. Even if asked for a loan, which they want to give, they are reluctant to execute the deal because they are aware of the number of properties being operated at a loss due to the present crude price in comparison with other costs.

Added together, the situation of the bank and the operator forms another bottle-neck to oil discovery and production of present known reserves.

British Expand Air Service During War

ALL the expansion of non-military aviation is not being postponed until after the war. New airmail services and passenger-freight routes have been inaugurated in recent months.

Airgraph service linking Syria and the Lebanon with Great Britain, Northern Ireland, Eire, Canada, and Newfoundland was inaugurated in January of this year; and it is reported that there is considerable demand for extensions of that service to other countries.

Airmail service between Beirut and Cairo, via Palestine, was made available to the public in February.

The initial air link between Algiers, Algeria, and Cairo, Egypt, was recently established, according to the foreign press. The service operates over the Brazzaville-Cairo-Beyrouth route, and it is anticipated that freight as well as passenger service will be available.

A British magazine recently stated that last year, 850 tons of mail, 2250 tons of freight, and about 43,000 passengers were carried by the flying boats and land airplanes of the British Overseas Airways, which covered approximately 10,000,000 miles during the year in about 67,250 hours of flying time.

Oil Is Ammunition

Whichever side best supplies its armed forces with proper petroleum products, when and where they are needed, and comes nearest to denying them to its enemies, when and where needed, will ultimately win. —JUDGE WILLIAM P. COLE, JR., *former member of House of Representatives from Maryland.*

Oil Firms Aided Air Patrol Financially

IMPRESSED by the exploits of amateur aviators who flew their own unarmed "one-lunger crates" far out to sea to detect and chase enemy submarines, tanker crews and oil companies raised thousands of dollars to keep the service operating until the Army took it over in April, it has been disclosed by the Office of War Information.

While the government was paying pilots and some maintenance costs, checks frequently were so delayed that members of the Civil Air Patrol often were in danger of being evicted from their boarding houses, and at one time J. Howard Pew, president of Sun Oil Company, offered to put up $10,000 to tide the patrols over, the OWI said.

"But instead of that," it said, "Eight large oil corporations, whose fleet crews were bringing in tales of amateur planes that saved ships, collected $40,000, which was put at the disposal of CAP."

A review of the patrol reports, it was stated, show that 50 times CAP planes have scared off submarines about to torpedo or shell tankers.

Synthetic Tires To Outlast Cars

IN THE not very distant future automobile tires capable of a minimum life of 100,000 miles will be perfected from synthetic rubber, and instead of buying a new set of tires for his car a motorist may buy a new car for his tires. This is the prediction of Dr. Gustav Egloff, president of the American Institute of Chemists and research director for Universal Oil Products Company, made in addressing the National Association of Manufacturers.

The 100,000-mile tire will become possible because "they will be made of synthetic rubber, designed by man to meet exact specifications," said Egloff.

This Is An Oil War
Oil is life blood of every instrument of war, from bombs to planes, tanks, ships.
Every industrial plant and machine depends upon products of oil.
Oil is necessary to transport every item of war, be it workers, food, soldiers, guns, shells or raw metal ores.
In addition, oil performs a multitude of other amazing and highly essential duties.

Oil Industry and Oil Workers Highly Essential to the War

By L. J. LOGAN, Associate Editor

IF YOU are a worker in the oil industry, doing your job well, you are doing your country a wartime service easily as essential as that of the helmeted shipyard worker or the man or woman employed in the aircraft factory or the munitions plant.

In fact, if there are degrees of essentiality among war industries and war workers, a ranking second to none may be claimed by the oil industry and the men and women who operate it.

From the standpoint that oil is essential not simply in one or a few but many phases of war-waging, the industry and its workers may claim, indeed, a preeminence in the matter of being necessary for victory. In the struggle in which the nation is engaged there are four main fronts: (1) the fighting front, (2) the factory front, (3) the farm front, and (4) the fireside front. All are indispensable to victory. And oil is indispensable on all those fronts.

It is true that ships are indispensable in this war around the globe, but the battleship or merchantman is but a mass of steel until the oil industry breathes life into it and makes it more.

As evidenced in current news, the United Nations are depending heavily on air superiority for victory. But the bombers, fighters, transports, and trainers which now come out of the aircraft plants in almost incredible numbers cannot take wing until filled by the oil industry with the life blood—aviation gasoline.

The bomber cannot take on its load of destruction for the enemy until after the oil industry has performed its assigned function of providing ingredients for the explosives.

When a plane takes off it uses a runway topped with asphalt furnished by oil industry workers, and it rolls on wheels equipped with rubber that is now being made by the petroleum industry. The synthetic rubber also serves hundreds of other war purposes, on the fighting front and on all the other fronts mentioned above, being used on trucks, tanks, and all other motorized military equipment, on ships, and in many ways in essential civilian activity.

Tanks have played a very important role in this war, as in the first World War, but a tank without fuel is only scrap iron for the enemy.

Petroleum Is Life Blood

Briefly, petroleum is veritably the life blood of modern mechanized warfare, and the oil industry worker helps to make possible practically every blow struck at the enemy: every dropping of a bomb on Axis territory, every blasting of an enemy ship from the seas, every advance of tanks and motorized units, every firing of a gun.

Without the contribution of oil-industry workers toward the waging of the war, there would be no gasoline, lubricants, fuel oil, explosives, chemicals, and other essential materials on the war fronts. There would be a virtual stoppage of our great industrial machine on the production front, and a fatal disruption of vital activities on the home front.

"Strategically, the petroleum industry is one of the most important in our entire production program," recently stated Rear Admiral W. B. Young, of the United States Navy, "and it is handling its difficult assignment with outstanding success." The admiral had the highest of praise for the manner in which the industry has responded to meet the need of the Navy for millions of barrels of petroleum products, in the face of difficulties in supplying at the same time the heavy demands of war industries and established commercial accounts. The laboratories of the industry have succeeded, he said, in developing the finest products for ships, planes, and other equipment; and the results in quality and quantity have been "magnificent."

Credit for the extraordinary achievement, Admiral Young added, belongs equally to the millions of patriotic oil workers—the men and women who are exerting their utmost efforts in the oil fields, at the roaring stills of the refineries, in the laboratories and offices, in the pipe-line pumping stations, on tank

—Photo by Ewing Galloway

Long processions of military trucks are striking testimonials of the essentiality of the petroleum industry in waging a war. The trucks are powered by motors requiring gasoline in great volume. They roll on tires that are now supplied synthetically from oil. They must have lubricants and greases to keep going. Even the tarpaulins used on the trucks require oil, being treated with wax mixtures to make them waterproof.

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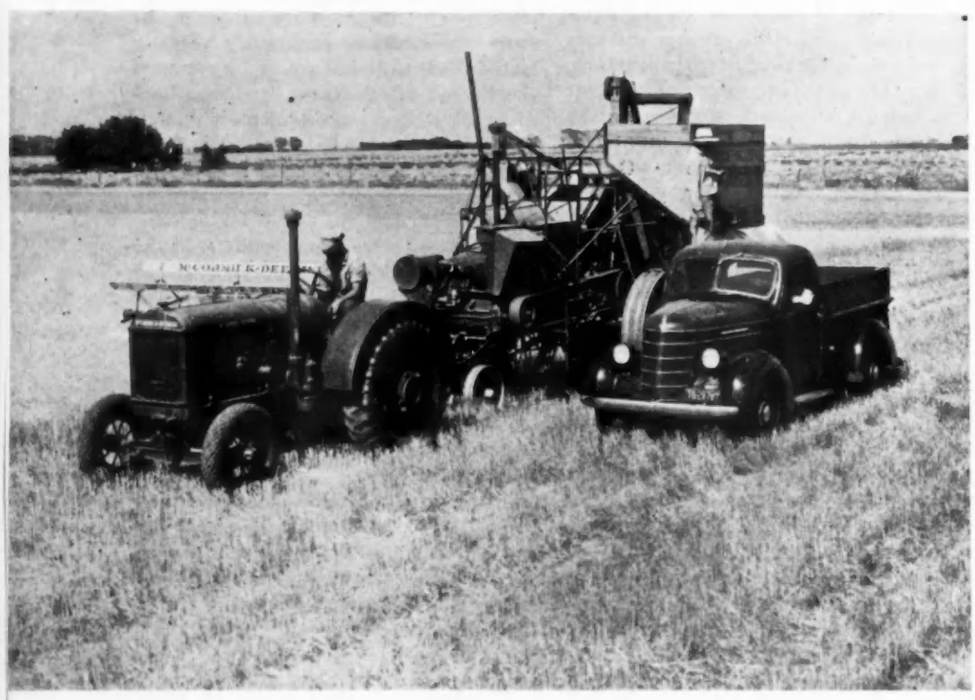
On the farm front as well as the fighting front motorized equipment is widely used, requiring large quantities of gasoline, tractor fuel, lubricants, and other petroleum products.



trucks, and on sailing tankers plying the sub-infested seas.

The participation of the oil industry worker in the prosecution of the war does not stop merely with helping to keep our ships sailing, our planes flying, our tanks rolling, and our guns shooting. Upon the oil worker's labor and skill depend the critically needed lubricants that keep the wheels of war production turning. He is supplying the indispensable cutting oils for the metal working trades that fashion the tools of war. He furnishes the petroleum-derived chemicals used in countless manufacturing processes. At the same time, he provides the huge quantities of oil products that are indispensable for maintaining the farm activity, transportation, and industrial operations, which enable the nation to go vigorously ahead in waging the war. Virtually every normal petroleum product is now a war product, aside from the numerous products made especially for use on the fighting fronts.

Several petroleum products have been made very well known generally as vital ammunition, including: high-octane gasoline, the super fuel which makes it possible for our aircraft designers to create faster and more powerful planes; toluol, the base material for TNT, used in shells, depth bombs, and torpedoes; and butadiene and butyl for synthetic rubber to be used in tires, balloon cloth, bullet-proof linings of airplane gasoline tanks, and in many other ways. The industry is producing these materials in ever-increasing quantities, besides providing vast amounts of motor oils needed to power and fuel our fleets of combatant and cargo ships and our armadas of tanks and other mechanized equipment. These products are being provided, in fact, not only for our own forces and facilities, but also in large volume for our Allies.

Numerous Amazing Uses

In addition to these widely known military products, the oil industry also is providing hundreds of lesser known products that are highly important in waging the war.

Petroleum solvents make possible the necessary paints, primers, lacquers, and numerous other protective coatings essential to the implements of mechanical warfare.

Asphalt is used in building runways for our airplanes and in the construction of ordinary roads.

Rust preventives derived from petroleum are used to prevent the deterioration of guns and gun components when exposed to the elements. Every shell and instrument must be similarly safeguarded.

Oils developed by the petroleum in-

dustry are now used in treating wool for blankets and uniforms. Other oils are necessary in the manufacture of rope and rope products, such as fiber-conditioning oils, jute treating, and cordage oils; these rope materials are being used in vast quantities by the Navy and merchant marine and also being employed by other branches of the armed forces.

Anti-slick grease for submarines is one of the uses of petroleum by the Navy, this grease being employed to lubricate the bearings and surfaces of the submersible's fins without leaving telltale oil spots on the surface of the water, as the grease sinks instead of floating.

Petroleum products supply various oils used in processing foods, as well as paraffin waxes essential in the packaging and shipment of food for the Armed Forces and our Allies.

To keep food fresh, on shipboard and ashore, refrigeration and ice-making equipment is necessary; and refrigerator-machine oils with low pour points are used extensively for compressors of nearly all types of this apparatus.

The oil industry takes an important part in safeguarding the health of the nation's fighting men. It provides insecticides to control mosquitoes, flies, and other pests, and thereby prevents serious epidemics. Salves and light mineral oils of many kinds aid in speeding the recovery of our wounded. Other oils enter into the manufacture of soaps and toilet preparations to keep the men clean and healthy.

In the wide range of lubricants now turned out by the oil industry are: an oil blended with sperm oil for the small motors that operate torpedoes; and low-temperature greases for aircraft, which remain fluid at 60 degrees below zero and yet function at 200 degrees above.

Hydraulic oils are supplied for activating the mechanisms for turret guns.

A liquid is provided to impregnate shoes against war gases.

To protect sand bags and tents against mildew, the industry has developed a special emulsion.

Proper greases are provided to lubricate and lengthen the life of wire rope in its many applications by the armed forces and in war-production plants.

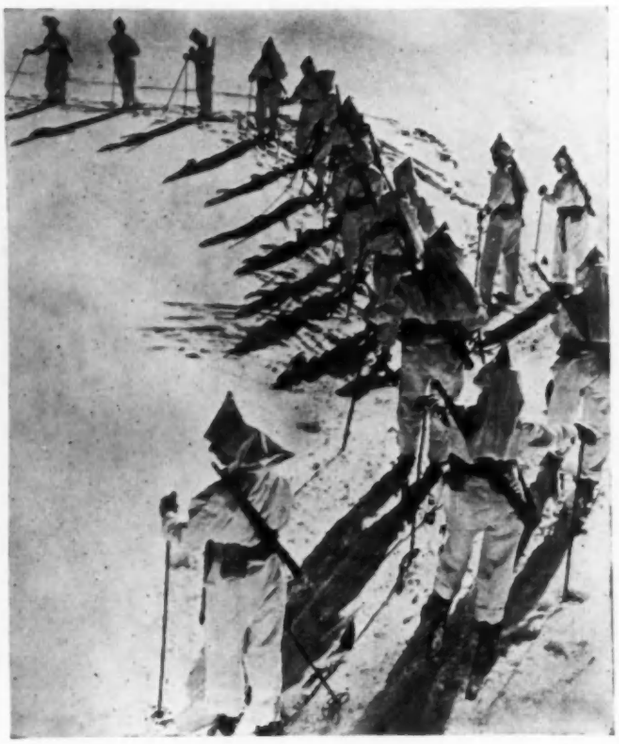
The turbines that activate our ships are safeguarded by special turbine oils containing such petroleum additives as butylated para cresol, naphthenic acid salts, and sulphurized cracked hydrocarbons.

Veterinary medicines and supplies containing light oils and petrolatums are used in the cavalry and on the farms, while livestock sprays originate at petroleum refineries.

Although small in quantity, airplane

Transportation is vital to the war, and both quality lubricants and fuel must be supplied to railroads, boats and trucks to assure speedy movement of materials which is essential to maximum industrial production and both civilian and military life. Many railroads use diesel oil as fuel, practically all boats are powered with this product, and, of course, motor trucks need gasoline for their engines.

Petroleum products are highly essential to the important metal working industry, where all implements of war are fashioned. Cutting lubricants make it possible for lathes to operate at high rates of output, serving to cool and wash away excess metal at the same time. The terrific heat and pressure encountered in modern rolling mill journals make special lubricants necessary. Metals must be quenched for necessary hardness and tempered to relieve the stresses and strains, and therefore tempering and quenching oils are needed.



Oil contributes to the war effort in a thousand and one different ways, many of them amazing. It aids non-mechanized units, whether they are fighting in the frozen north or tropical Pacific.

American ski troops depend on oil for certain supplies. These troops carry three different grades of wax for their skis, to provide three different advantages in the snow: in high speed down grade travel, in climbing and in running.

Protection against insects is provided U. S. soldiers in the form of insecticides, originally developed for use in the home. These insecticides kill germ-carrying flies, mosquitoes, and other insects, thus preventing epidemics that might take more lives than bullets.

—International News Photos.

instrument oils, provided by the oil industry, must be scientifically prepared and high in quality to assure proper lubrication in all temperatures, thereby guaranteeing **accuracy** of the instruments.

Despite wide conversion of industrial plants to the use of coal instead of fuel oil, many war production factories cannot be so converted and must continue to obtain fuel oil to keep in operation.

Diesel oils provide the power for the recharging of the batteries that motivate our submarines beneath the surface. Diesel fuels also furnish the motive power for PC boats and similar small craft.

From the laboratories and refineries of the oil industry have come medicinal preparations for the cure and prevention of athlete's foot, a common trouble of men in the service.

On training fields, soldiers are spared the discomfort of dense clouds of dust by the dust-laying oils that the industry originally developed for playgrounds.

Protective oils are necessary in the recoil mechanism of all our large guns and also for lubricating the gun muzzle and for protecting the shells.

Leather treating and preserving oils not only keep boots, saddles, and harnesses of the cavalry soft and pliable but also serve to waterproof those leather goods.

In considerable numbers, petroleum industry workers have been leaving the industry to work in munitions plants or other lines which they have erroneously considered as more essential. But Manpower Commission Chairman Paul V. McNutt has joined Petroleum Administrator for War Harold L. Ickes in a joint public statement that "Petroleum is regarded as one of the most essential of war industries."

Oil Workers Essential

"Oil and natural gas are vital to this war," declared the two officials, "and it does not help to win the war for men who have long been trained and skilled in this industry to leave their present jobs. We wish to emphasize that while planes, tanks, and ships fight the battles, they cannot fight without oil to fuel them. The production, refining, transportation, and distribution of oil and gas are all necessary."

Judge William P. Cole, Jr., former member of the House of Representatives from Maryland, in his distinguished letter on oil to the President, asserted: "This is an oil war. The art of war since the birth of Christ has been changed and molded to entirely new patterns by only two great influences, namely, gunpowder and petroleum. . . . There is no weapon of offense or defense in modern war that does not require petroleum. Transportation from our shores to the very battle front, which is three fourths of the problem in global war, is dependent, 90 percent, on oil. . . . Oil is not the offspring, but the sire of subs, of trucks, of tanks, of airplanes."

As an illustration of the importance that petroleum products have in war, stated Judge Cole, we have the evidence that two thirds of all of the entire tonnage consumed in expeditionary forces, including their transportation and protection, is petroleum.

"Whichever side best supplies its armed forces with proper petroleum products, when and where they are needed," he asserted, "and comes nearest to denying them to its enemies, when and where needed, will ultimately win."

☆ ☆ Oil War Posters ☆ ☆

On the opposite page appears the first of a series of full page posters illustrating some of the important and numerous essential duties that petroleum is playing in this war.

A similar full-page poster, illustrating other wartime petroleum uses, will appear in each succeeding issue of The OIL WEEKLY.

OIL IS AMMUNITION

TWO-THIRDS OF BATTLEFIELD MATERIAL

That this is an oil war is best illustrated by the evidence that two-thirds of all the entire tonnage weight of material used by our expeditionary forces, including their transportation and protection, is petroleum and its products. With less than one-third of our projected military forces in foreign theaters of war today, military consumption will be multiplied many times whenever a major offensive effort is made.

OIL DIRECTS TORPEDOES

Oil makes torpedoes go as directed. Inside every torpedo fired at Axis vessels is an ingenious device called a gyroscope which keeps the projectile on its predetermined course. Protecting the mechanism of each of these intricate pieces of mechanism is a special lubricant designed to do a specific job.

RUST PREVENTIVES

Exposed to the elements, guns and gun parts soon would become oxidized and rendered useless were it not for the protective coatings of rest preventives supplied to the armed forces by the petroleum industry. In addition to the guns themselves, every shell and instrument is thus protected from the attacks of oxygen.

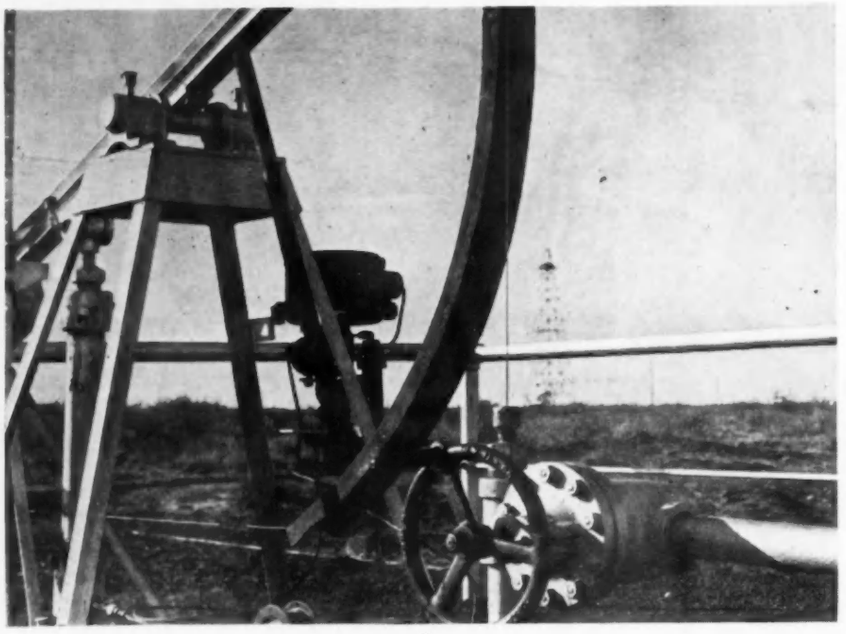
AN ARMY TRAVELS ON ITS STOMACH

This adage has been proven time and again. Of course, oil helps to produce and transport the necessary foods. In addition, vast quantities of petroleum paraffin waxes, lubricants, conditioning oils, and insecticides are used in America's food processing plants.

Oceans of Oil Needed

YOUR JOB IS VITAL FOR VICTORY

Poster No. 1 — THE OIL WEEKLY



The driving unit, equipped with a time-cycle control valve and regulator, has the horsehead extended by welding channel iron to its lower end. This is braced by a vertical rod welded between the beam and the back of the channel section. The wire connecting to the driven unit goes off to the right from the bottom of the extended head.

Gas-Lift Unit Driven by Wire Extension from Another Well

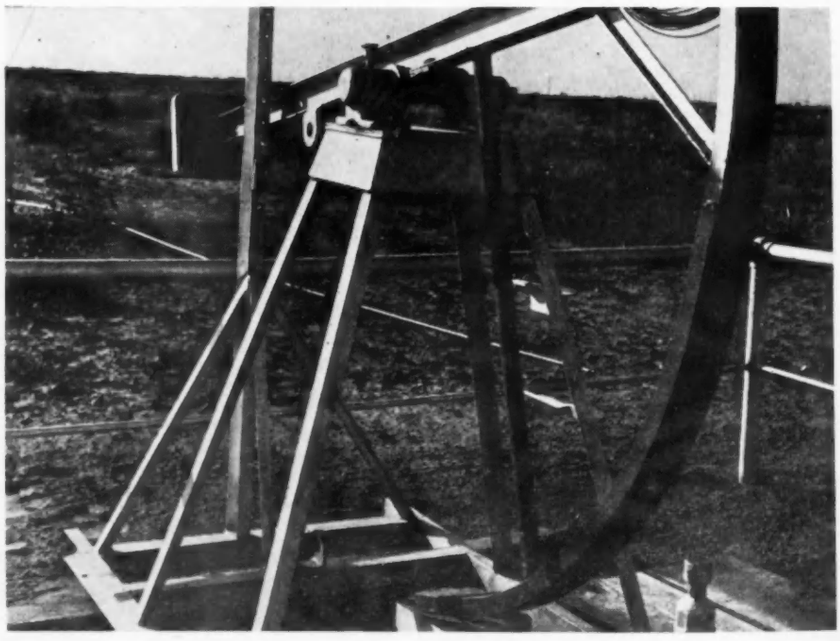
By C. A. McGILL

UNABLE to obtain a new much-in-demand gas regulator, an operator in the Kermit field of West Texas found it expedient to borrow a regulator from one of his wells produced by means of a gas intermitter. This left one well shut down for lack of a lifting medium, and the non-productivity of this well immediately showed up in the tank battery, the lease being a marginal property. Consequently, it was essential that this well be operated by some means.

The particular type of intermitter used employs a weight bar, hung by means of a wire line from the jack horsehead to operate the subsurface valve; when the jack is down the weight bar rests on the valve, thus opening it; when up, the valve closes by spring action. Overbalancing the bar, are weights placed on the other end of the jack beam; when the gas pressure is removed from the power piston and cylinder the counterweights cause the jack to lift the weight bars from the subsurface valve.

Deciding that it was feasible to drive the surface jack from the unit on an adjoining well, the horseheads on both jacks were extended by welding channel iron to the lower portions; thus bringing a guide for the wire line only a few inches above the foundation frame of the units. The wire line operating the subsurface valve on the driving unit was extended around the horsehead pulley, brought back down the head guide and thence across the intervening territory on wooden hold-ups to the reins of the driven surface unit. Two small holes were drilled into the lower portion of the driven head to permit the wire from the driving unit to be "reined in."

Operation requires that the driven unit be stripped of some of its counterweight, and the driving unit requires additional weight to the beam. Both units produce in a similar manner, and have given efficient service.



The driven unit, divested of its control regulator, its power piston and cylinder and most of its counterweights, looks bare. The wire-line connection with the driving unit is "reined in" at the bottom of the extended horsehead.

Crude Oil Prices and Conservation

By JOHN D. GILL*
The Atlantic Refining Company

Before the Quarterly Meeting of Interstate Oil Compact Commission

MANY countries will be saved from vandalism, and their peoples from terrorism, massacre and enslavement, by the practice of the principles of conservation evolved by the personnel of the oil industry and the oil-regulating bodies of the states which ratified the compact creating your commission.

That eventuality establishes the importance of conservation. Now the practice of conservation is threatened by the federal price-control agency's current policy concerning petroleum prices. To outline the possible serious ultimate consequences of that policy is my present purpose.

I need not take time to tell you how necessary oil is to quick victory over our powerful enemies. It is sufficient to say that we will win the war by our use of unprecedented amounts of oil, vastly exceeding the oil available to the Axis powers. Currently, the American oil industry can produce, conservatively, that is, without waste, approximately 4,600,000 barrels of oil a day. If it were forced to abandon the practice of conservation, as it might have been forced to do if our enemies had been more successful in their attempts to capture the oil resources of other countries, it could produce a substantially greater quantity daily. There would be no question of a shortage of oil with which to bring the war to an early successful termination and with the minimum loss of life and property of the United Nations. We could veritably deluge our enemies with petroleum.

The practice of conservation during most of the last 18 years has led the industry to discover nearly 15 billion barrels of oil in excess of the quantity it has produced. By this means its proven reserves have been increased from 5,300,000,000 barrels at the beginning of 1925 to a little more than 20 billion barrels at the beginning of the present year.

Perhaps it is the existence of this vast productive capacity which has made the Office of Price Administration turn a nearly deaf ear to the industry's petition for a measure of the proved effective means of stimulating the search for additional reserves. That agency exercises vast powers over the production processes of the oil industry through the control of the prices of its raw materials and products. But the very complacency of the agency threatens a breakdown in the practice of the principles of conservation which this commission, its underlying state agencies, and the personnel of the petroleum industry have labored so strenuously to perfect. It is because of the close relation between the practice of conservation principles and the practice of price policies that at this time the members of this commission must of necessity possess a lively interest in the latter policies, as they have heretofore in the former practices.

Were it not for the conservative methods of oil-field development, and of crude-oil withdrawals from reserves, which the commission has so unreservedly sponsored, the oil industry even now might be moving heaven and earth to discover and develop additional oil reserves with which to stave off the enemy. And believe me, if one can judge from the obvious willingness of the Army and Navy to pay productively stimulating prices for the munitions of war which are urgently required, the efforts to find and develop crude-oil reserves would not be restricted by a price policy established to achieve some entirely different and non-productive purpose.

Because of devotion to the anti-inflationary fetish and the complacency to which I have referred, no weighty measures have been adopted for the stimulation of the search for oil, although some exceedingly fantastic suggestions for the subsidization of selected elements of our business have been proposed; and no very effective changes have been made in prices of crude oils, except to a limited extent in the California producing area.

Before proceeding with a discussion of the intimate relation which exists between the prices of petroleum and the conservation of this resource, I should like to offer for your consideration a few figures which establish the validity of the statements already made. At the beginning of the year 1925, according to a generally accepted estimate, the domestic petroleum industry possessed a proven oil reserve of 5,321,427,000 barrels. That reserve was drawn upon freely without regard to the principles of conservation subsequently evolved and promulgated and slowly woven into the practices of the industry. Over the next 18 years, that is, to the first of this year, the industry discovered reserves estimated to yield by conservative methods of production 33,455,778,000 barrels of oil. During this period, the industry produced 18,694,412,000 barrels of oil from the total reserve, by methods each year more and more in accord with the principles of conservation. Consequently, the underground inventory of proven oil increased by 14,761,366,000 barrels. At the beginning of 1943 the reserve contained 20,082,793,000 barrels. Had the industry continued during the 18 years after January 1, 1925 the production practices in vogue at the beginning of the period, and had the demand upon it been as reported, there would have been discovered reserves which in all probability ultimately would have yielded only 20,006,052,000 barrels by those now outmoded production methods. As of the first of this year the proven reserve would have been only about 6,700,000,000 barrels, which is all the reserve necessary for the production of today's supply on a wide-open-flow basis, if each year about as much oil is discovered as is produced. However, the industry and the public would be subjected to all the effects of the vicissitudes of discovery, including violent changes in prices, a characteristic of the industry's affairs over many decades.

Now note please that the difference between the 33 odd billion barrels, which the industry believes it discovered during this period, and the 20 odd billion barrels which it would have reported as discoveries while exerting it-

* E. T. Knight, The Atlantic Refining Company, collaborating on the calculations.

self to supply the 18 odd billion barrels of actual demand, is, to a considerable extent, maybe nearly to the full extent of the 13 odd billion barrel difference, oil that was saved to the country by the practice of the principles of conservation. This vast conservation increment is placed in jeopardy by a price-control policy which ignores the needs of the industry for additions, through price increases, to the revolving fund employed for the whole process of finding oil. Existing reserves are threatened with wasteful depletion as the result of the declining[1] fruitfulness of discovery efforts.

It is conceivable that in the event of an indefinite prolongation of the war, making ever-increasing demands upon the petroleum industry, that withdrawals each year would continue to exceed discoveries; would force the industry to resort to the rapid exhaustion of reserves by practices abhorrent to this commission, bringing about a loss of all, or most, of the 13 billion barrels of reserves which the industry has husbanded through the practice of the principles of conservation. This is a possible price that the public would have to pay for the negation of the Petroleum Administrator's recommendation for a general crude oil price increase of 35 cents per barrel, which is less than 0.85 cents per gallon.

During recent years, indeed continuously to the present time, the production of crude oil has proceeded in an orderly way without the free flowing of wells, or other excessively rapid and wasteful exhaustion of reserves, and, with only minor exceptions, at rates at or below the estimated maximum efficient rates of production. These facts seem to support a view that no one has cause for remonstrance with the price agency's negation of a general crude-oil-price increase on the ground that the negation weakens[2] the practice of conservation. They may satisfy those who pride themselves on being realists, as well as conservationists, with a strong bent to a rigid national price policy, because they are all the facts. But true realists and true conservationists deal not only with the facts of the past and present moment, but also with the probabilities of the future. The probabilities have been forecast by the long-experienced and competent personnel of the crude-oil-price study group of the Cost and Price Adjustment Committee of the Petroleum Industry War Council, and by the crude-oil-production specialists of the Office of the Petroleum Administrator for War. I shall not here go into the details of their reasoning. Their main conclusions may be expressed briefly, as follows:

1. In the near future the demand for petroleum will exceed the currently available maximum efficient supply, necessitating resort to wasteful production;

2. Because of increases in virtually all of the items of cost in the search for and development of reserves, and especially because of the increasing effort required to achieve any given volume of discovery; the capital[3] costs of crude oil properties and the operating costs of producing crude yet to be discovered will be measureably higher than the costs that attach to the reserves heretofore discovered and developed.

But the probabilities cannot be proved. The Office of Price Administration does not consider them inherently factual. Therefore, they are of little concern to that agency. Complacency continues to obsess its mind.

The chief reason for the price-control agency's negation of the industry's claim for an upward adjustment in ceiling prices may grow out of the fact that it is the servant of two masters, and like the servant of the biblical parable, must cleave to one and despise the other. The two masters are respectively: first, the hold-the-line policy of the executive branch of the federal government; and, second, volumes of production necessary to the highest welfare of the nation. Its price policies must serve both masters. The price agency appears to be very much more concerned about the effect of an increase in the price of petroleum upon the hold-the-line policy than upon the industry's ability to satisfy, without waste, all demands upon it, or upon the financial status of producers who are forced now to produce oil for prices which will not yield replacement costs.

The hold-the-line policy, therefore, becomes the primary master and the volume of production to satisfy demand the secondary one. But this is not to say that in its disregard for this secondary master, the agency in charge of price control would openly sponsor, or even indifferently acquiesce to the wasteful production of properties. No doubt that agency would exercise itself to avoid such imputation. But if the committee of the PIWC and the experts of PAW are right in their judgment regarding the imminence of a shortage of supply, an issue may be created which the Office of Price Administration cannot long ignore. Either crude oil must be wastefully produced in order to satisfy total demand, or total demand must be further reduced for the purpose of holding the line. Perhaps it is largely because of a leaning toward the second of these alternatives that the power to ration petroleum products has been invoked. Rationing for cause or by pretext has proceeded to such an extent that the entire demands of our military forces, which have multiplied an unimaginable number of times the peacetime volume, have been and continue to be met, by the deprivation of the civilian population. Indeed the 1943 civilian consumption probably will be 385 million barrels less than it would have been had the war not altered the relatively even tenor of our ways.

If the deprivation of civilians were the only course open for the most vigorous prosecution of the war, there would, of course, be no issue. But the severe restriction of civilian consumption in nearly all parts of the country should be unnecessary; restriction operates to increase the inflationary gap, so abhorrent to the price administration; and in a significant way does violence to the principles of conservation broadly interpreted in terms of the welfare of the people.

When petroleum products are wisely used, many opportunities for a fuller, richer life are provided. I need not attempt to detail the effect of the petroleum-propelled and lubricated automobile upon the development of our American society. It has made possible the better education of our children, especially in rural communities by replacing the one-roomed school by the consolidated school. It has increased the accessibility of natural economic resources of forest and field, mountain and lake; brought a freer social mingling of the people; broken down some barriers between them; and has been the basis for a certain economic progress subtly brought about by the intensification of competition as buyers have been enabled to compare values offered by merchants in different parts of large towns and of merchants in one town with those of another.

Now it well might be that the impacts of the war, which brought about a reduction in the usually employed oil transportation facilities available to the Eastern section of the United States; and the loss, for the time being, of our accustomed source of rubber, might have forced a rigorous restriction in the use of gasoline in that area. But the loss of transportation had little, and the loss of our rubber supply had nothing directly to do with the restrictions in the consumption of that fraction of crude petroleum which ordinarily is employed for the heating of homes and

[*Continued on page 32*]

[1] See Report "On the Study of the Crude Oil Price Structure to Determine Those Factors Which can be Expected to Stimulate and Increase the Rate of Discovery of New Reserves of Crude Oil" by the Committee on Cost and Price Adjustment to the Petroleum Industry War Council, February 3, 1943; See E. De Golyer, before the Annual Meeting, A. I. M. M. E., February 18, 1943.

[2] It appears highly significant that the Petroleum Administrator for War has certified for June, 1943, generally lower production rates to the Eastern and Midwest producing states because of the **declining productive capacities** of the fields in those areas.

[3] The outlook is for replacement costs upwards of one-third higher than the capital costs of existing productive facilities. (Author)

Factors Necessary for Consideration In Planning a Secondary-Recovery Development

By R. C. EARLOUGHER
Geologist, Standards Company
Tulsa, Oklahoma

Part 3 of a Symposium on Secondary Recovery

This is the third of a four-part symposium on secondary recovery methods. Other chapters include:

Part 1—"Significance of Secondary Recovery in the United States," by Paul D. Torrey, chairman of the Standing Subcommittee on Secondary Recovery Methods, American Petroleum Institute. Published June 21 issue.

Part 2—"Secondary Recovery in Terms of the Engineering Problem," by George H. Fancher, professor of petroleum engineering, University of Texas. Published June 28 issue.

Part 4—"Flowing Water-Flood Production," by T. F. Lawry, Forest Producing Corporation. To be published.

This symposium was presented at the 28th Annual Meeting of the American Association of Petroleum Geologists, Fort Worth, Texas, April 9, 1943.

BEFORE any secondary-recovery project is started a thorough investigation should be made to determine the feasibility of such operations and also to decide upon which type of operation, that is, gas injection or water flooding, is to be used. Such a study is roughly divided into two parts. First, the preliminary investigation which has to do with the assembling of all available records and information concerning the property under consideration and a thorough analysis and breakdown of such information. Second, if the preliminary study proves favorable a detailed investigation should follow. This latter normally consists of obtaining new information, namely, the drilling of new wells and acquisition of cores of the producing formation and the subsequent detailed analyses and interpretations of results secured therefrom. If, from this detailed study, it is decided that secondary-recovery operations merit a test in the field, the operating plan should be set up and preparations made for close and careful operating control during the life of the project.

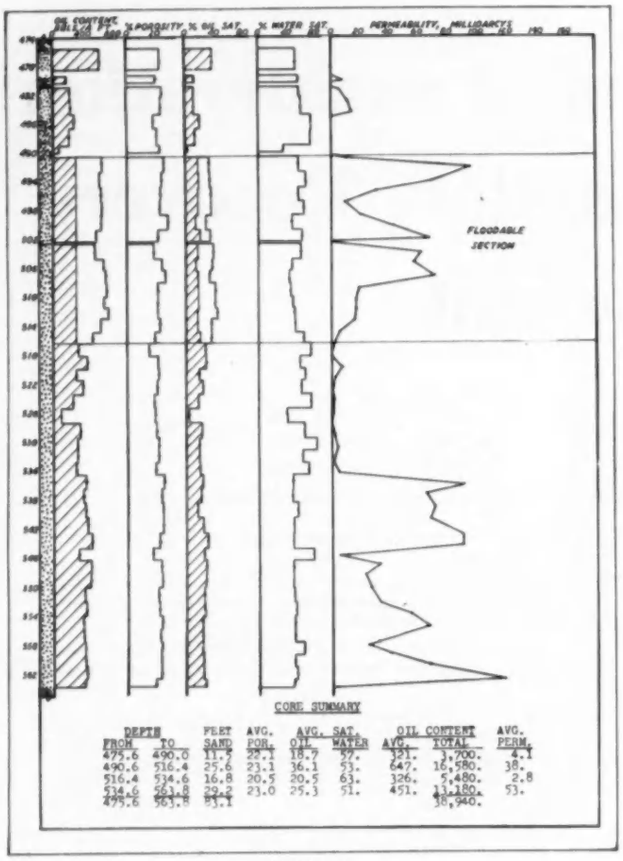
Preliminary Investigation

Briefly, the preliminary investigation should cover the following points:

1. Past production records and history.
   (a) Initial production.
   (b) Sustained production.
   (c) Total primary recovery.
2. Water production from old wells.
3. Sand thickness and areal extent from old logs.
4. Condition of old wells.
5. Number and location of abandoned holes.
6. Gravity and viscosity of oil.
7. Water supply for flooding or gas supply for injection.
8. Market and selling price of oil.

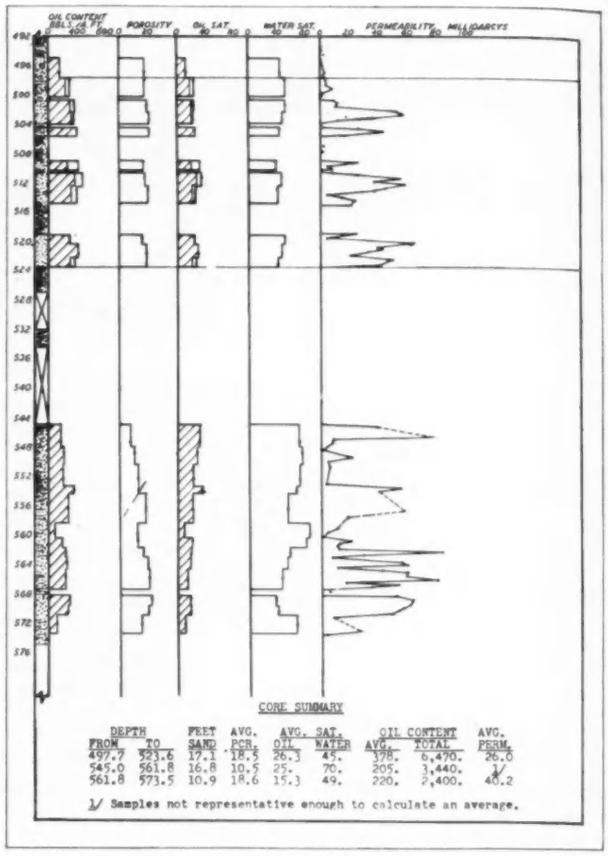
Past production records and history are important in that these are usually the chief factors which call attention to the possibilities of a field for secondary recovery; however, these factors alone are not sufficient in all cases to warrant secondary operations. The initial production record is important in that from it a rough idea of the permeability of the producing formations can be obtained, together with initial gas content of the formation. This factor is important especially in those cases where no core analyses from the field are available. The sustained production record is also important in that it gives an idea of the producing capacity of the formation. The total primary recovery when available is also important but should be expressed not only as total barrels per acre recovered but also as barrels per acre-foot. In some cases primary recovery has been found to be so high that relatively little secondary recoverable oil has been left in the formation even in volumetric type reservoirs. This is, of course, contrary to theoretical studies; however, it is the actual existing condition in several fields in the Mid-Continent.

Water production from old wells is a very important item. If water production is present it is necessary to determine whether the water is actually coming from the producing formation or if it is coming from bad casing. If water is coming from the formation it may be indicative of an already existant natural water-drive in the sand or a high connate water content of the sand. If water is coming in from behind the pipe it may follow that certain areas of the sand are already watered out due to the intrusion of upper-hole water. The factor of sand thickness and areal extent of the producing sand is another basic item. Unfortunately in a great many cases no accurate data is available concerning sand thickness because of the non-availability of old well logs. In other cases where logs are available the information is most inadequate because of the discrepancies between sand thickness as reported by the driller and the actual net feet of clean producing sand. In other words as a matter of illustration, it is not at all unusual to find in an old field, where the sand thickness is reported to be 50 feet, that although the sand formation thickness is 50 feet, a large part of it is non-productive sandy shale and shale streaks so that actually there are only 30 feet of clean sand.



DEPTH FROM	DEPTH TO	FEET SAND	AVG. POR.	AVG. SAT. OIL	AVG. SAT. WATER	OIL CONTENT AVG.	OIL CONTENT TOTAL	AVG. PERM.
475.6	490.0	11.5	22.1	18.9	57.	321.	3,700.	4.1
490.6	516.4	25.6	23.1	36.1	53.	647.	16,580.	38.
516.4	534.6	16.8	20.5	20.5	63.	326.	5,480.	2.8
534.6	561.8	29.2	23.0	25.3	51.	451.	13,180.	53.
475.6	561.8	83.2					38,940.	

FIGURE 1



DEPTH FROM	DEPTH TO	FEET SAND	AVG. POR.	AVG. SAT. OIL	AVG. SAT. WATER	OIL CONTENT AVG.	OIL CONTENT TOTAL	AVG. PERM.
497.7	523.6	17.1	18.5	26.3	45.	378.	6,470.	26.0
545.0	561.8	16.8	10.5	25.	70.	205.	3,440.	1/
561.8	573.5	10.9	18.6	15.3	49.	220.	2,400.	46.2

1/ Samples not representative enough to calculate an average.

FIGURE 2

Experience has shown that in most cases the thickness of the sand as determined by logging the well cuttings is anywhere from 25 to 100 percent higher than the actual net productive sand as indicated by coring. (Figures 1 and 2.)

The number and condition of wells must be determined in order to decide upon the possible use of such wells in a secondary program. In some cases none of the old wells can be used and in other cases it is possible to use some of them as producers, while in other cases all the old wells still pumping may be utilized in the new development. Whether or not the old wells can or are to be used depends upon the condition of the individual wells and also upon their location with respect to any possible spacing pattern that might be used. The location and number of abandoned holes should also be determined. A great deal of field experience has proved that old holes are nearly always a source of trouble and expense. In the first place a large proportion of them may never have been properly or adequately plugged, thus allowing upper-hole water to enter the producing formation and start a natural water-drive. Except in cases where there is definite proof of proper plugging, it is necessary to go into the old holes, clean them out and plug them with cement before the secondary program is started. If this is not done and water-flooding is used the wells almost certainly will break out at some later date and result in the absolute necessity of plugging at a time when the operation proves more costly because of the bottom-hole pressure built up by flooding operations. Very often damage suits may also result from the break-out of old holes. In many cases, however, the location of old holes is not known and their presence not determined until the flood has been started and the holes have broken out. The location of abandoned holes should also be taken into consideration in planning the location of new wells to be drilled in the secondary program inasmuch as it is normally wise and oftentimes necessary to keep new producing wells as far as possible from such old holes because of the possibility of the sand being watered out already.

The gravity and viscosity of the oil should be determined. The gravity is important in that the selling price of oil depends upon it in most cases. The viscosity is important in determining to a certain degree the floodability of the oil; however, to date field results indicate that oil of viscosities up to 40 or 50 centipoises may be satisfactorily flooded under proper conditions of sufficient permeability and pressure.

During the preliminary investigation an adequate source and supply of flooding water or gas should be located, depending upon which method of secondary recovery is to be used. Possible sources should be located and the supply available determined so that when and if it is decided to continue with secondary-recovery operations a sufficient quantity of repressuring medium will be available. Finally in the preliminary investigation the market and selling price of the oil should be definitely established so as to be certain of an outlet for produced oil.

After the preliminary investigation has been completed it is necessary to determine whether or not the facts available warrant a further detailed investigation for secondary operations or whether the facts are so unfavorable that the particular area or property in question justifies no further consideration.

Intensive Study

In making a detailed study of a prospective area the first step necessary is to secure a sufficient number of cores so as to obtain as nearly as possible an average picture of the producing formation. The chief factors to be deter-

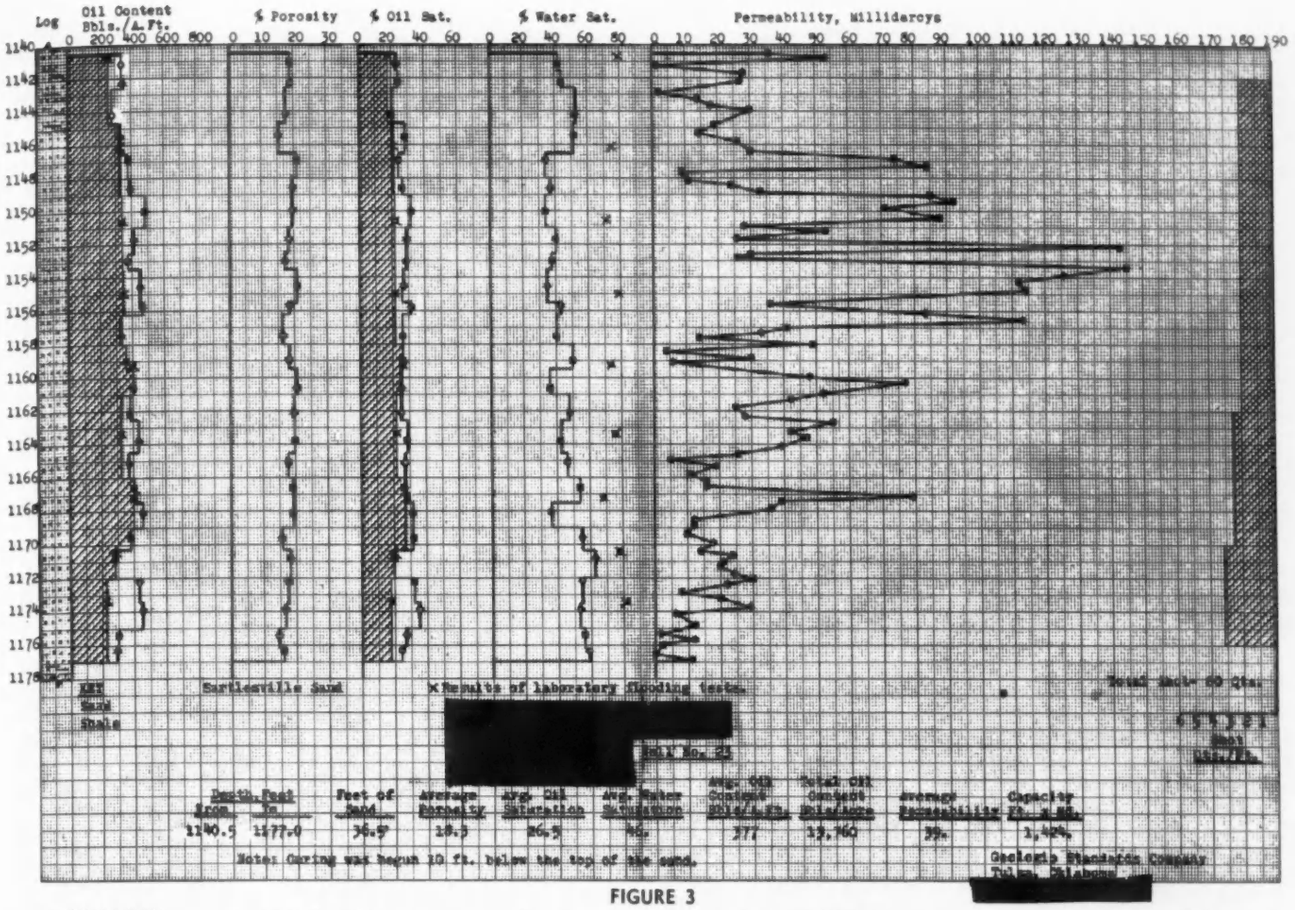


FIGURE 3

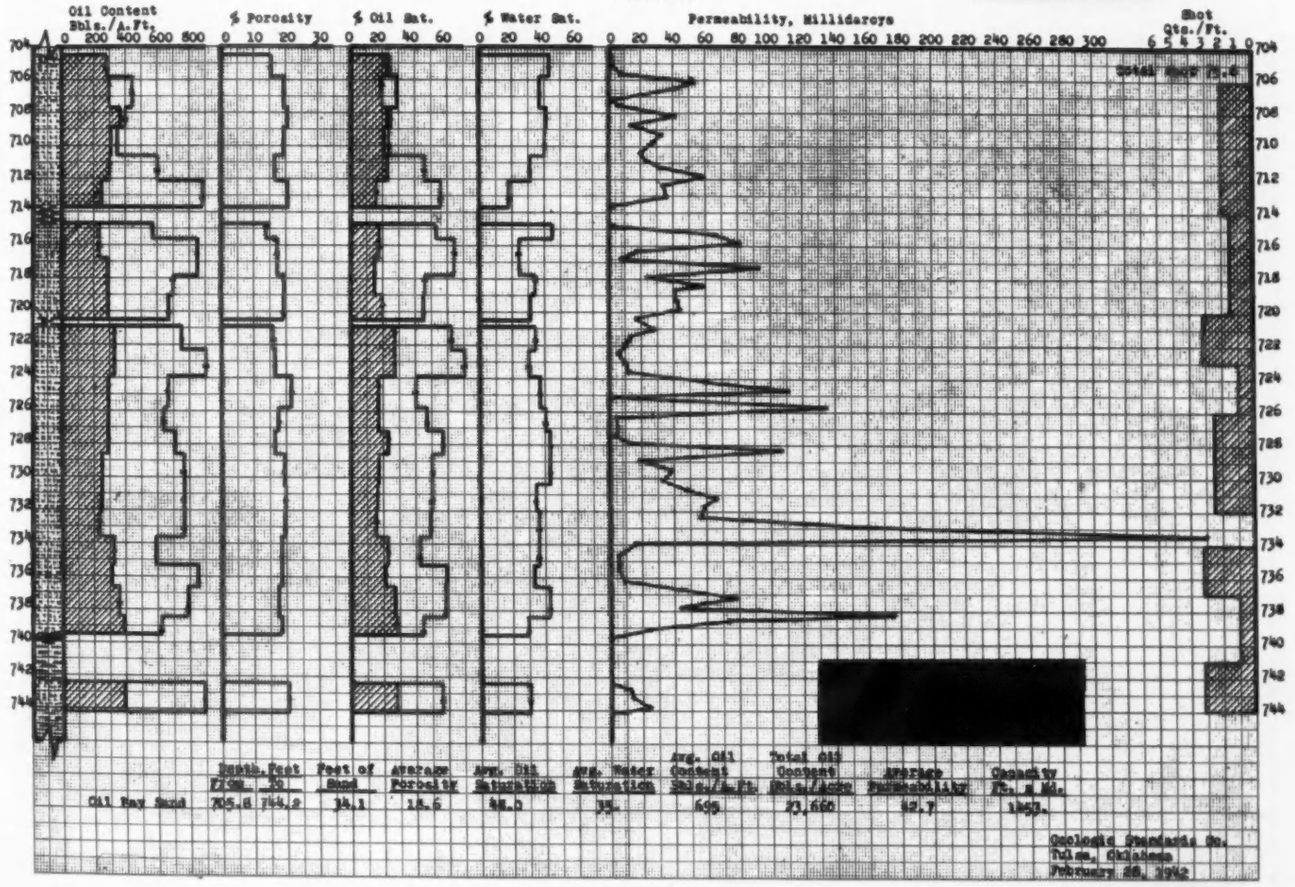


FIGURE 4

Uncle Billy's

32 Billion Dollar Dipper

Uncle Billy Smith and his crew had quit work for the week-end. Day after day for weeks, their crude tools had been pounding into the sand and shale of Oil Creek, near Titusville, Pa. They were down 69 feet, and still no strike of oil. So Uncle Billy went over on that Sunday afternoon, back in 1859, to do some figuring. Peering into the drill hole, he noticed what appeared to be water near the mouth. With an improvised dipper, he drew up some of the liquid and poured it on the ground.

It was black, gleaming crude petroleum! And Uncle Billy's dipper now is symbolic of the thousands of American producing wells that have been drilled since that historic Sunday. *They have changed the living habits of the whole world, and already have added a total of 32 billion dollars to American wealth alone!*

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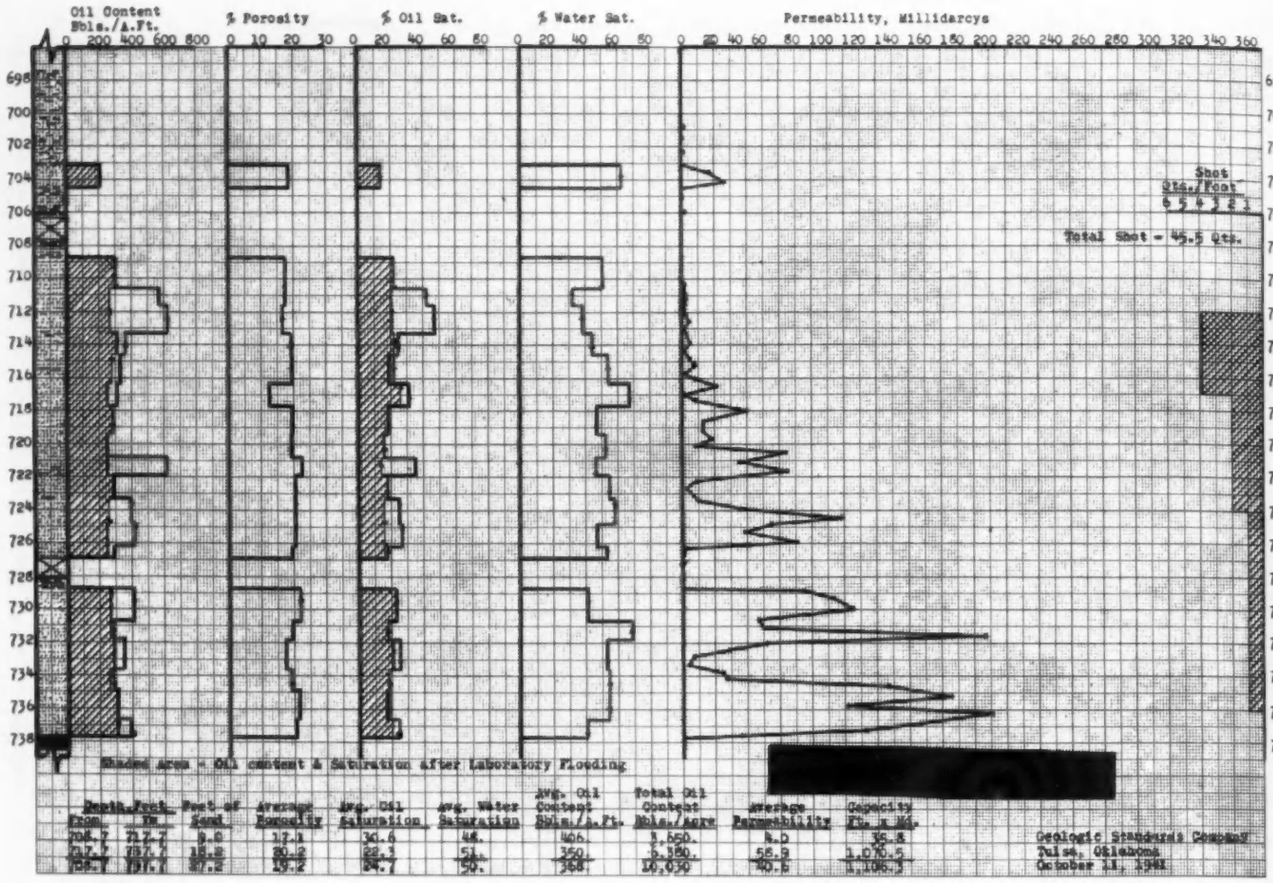


FIGURE 5

mined from cores and the resulting analyses are:

1. Net sand thickness.
2. Oil content in place in the sand as expressed as barrels per acre-foot, as well as total barrels per acre.
3. Percent porosity.
4. Percent oil saturation expressed as percentage of the total pore volume.
5. Percent connate water expressed as percentage of the total pore volume.
6. Permeability.
7. Laboratory flooding tests.
   (a) Residual oil saturation after flooding.
   (b) Differentiation between floodable and non-floodable sand.
8. Net floodable sand thickness.

1. Net Sand Thickness

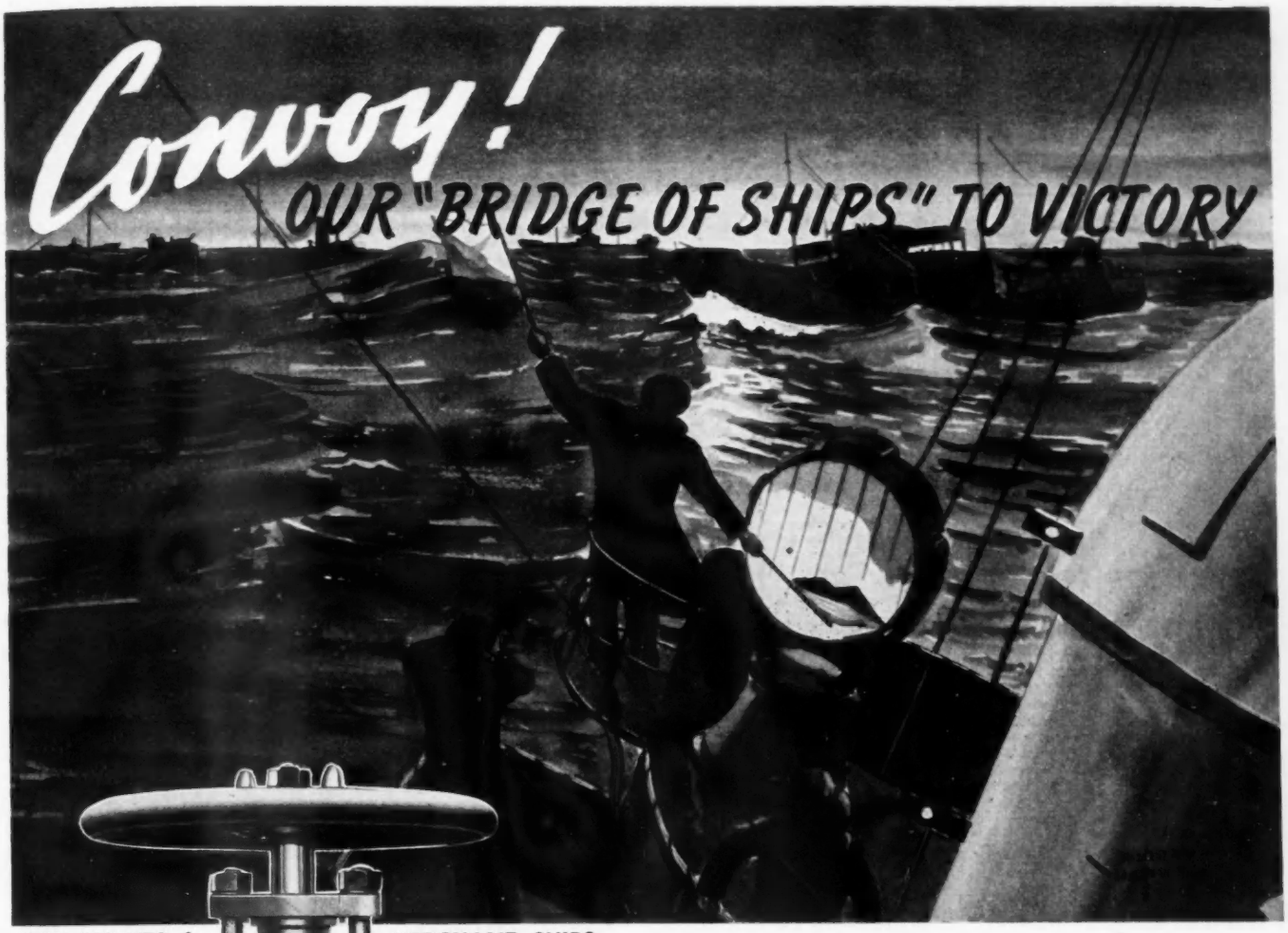
One of the first checks obtained by coring in an old area is that of net thickness of clean sand. As pointed out previously, well logs very often are considerably in error so far as actual amount of productive sand is concerned. Cores show almost immediately such a discrepancy. If the sand thickness being considered was only 20 feet to begin with and the core shows the thickness actually to be only 10 or 12 feet, it may be necessary at once to revise some of the preliminary conclusions.

2. Oil Content

Next, the oil content of the sand is an important factor in order to determine the probable amount of recoverable oil remaining in the sand. The oil content is more significant when expressed as barrels per acre-foot than as total content in barrels per acre. (Figures 3 and 4.) This latter figure has been used a great deal in the past and has proved to be very misleading in many cases. For example, at one time in the Mid-Continent it was stated that any property having a total content of 15,000 barrels per acre in place in the sand was favorable for water flooding. Such a statement is erroneous unless qualified according to net sand thickness. Such a content held in 20 feet of sand is indeed very favorable inasmuch as the average content would be 750 barrels per acre-foot. On the other hand, if the sand section under consideration were 40 feet thick the average content would only be 375 barrels per acre-foot and not at all favorable for secondary recovery. The oil content of a sand in a depleted pool normally may be determined directly by core analysis; however, in some cases where there is still an appreciable amount of gas in solution, together with an appreciable bottom-hole pressure, recoverable oil is dissipated from the core before it can be obtained at the surface. In such cases the core analysis shows only residual oil content which is very often equivalent to the residual to be expected at depletion by water flooding. In most of the shallow fields, however, cores give a relatively accurate determination of oil in place in the reservoir. For successful secondary-recovery operations it is felt that oil content should be equal to or in excess of at least 550 barrels per acre-foot and preferably about 600 barrels per acre-foot for a sand porosity of approximately 20 percent.

3. Porosity

The accurate porosity of the sand must be determined in order to calculate oil and water saturation on a percentage basis. The chief need for this seems to result from the fact that the oil content after primary recovery and again after the depletion by secondary recovery varies as a percentage of the pore space rather than on a straight volumetric basis such as barrels per acre-foot. In other words, in two sands of widely varying porosities such as 18 and 25 percent, it has often been found that in each case the residual saturation after



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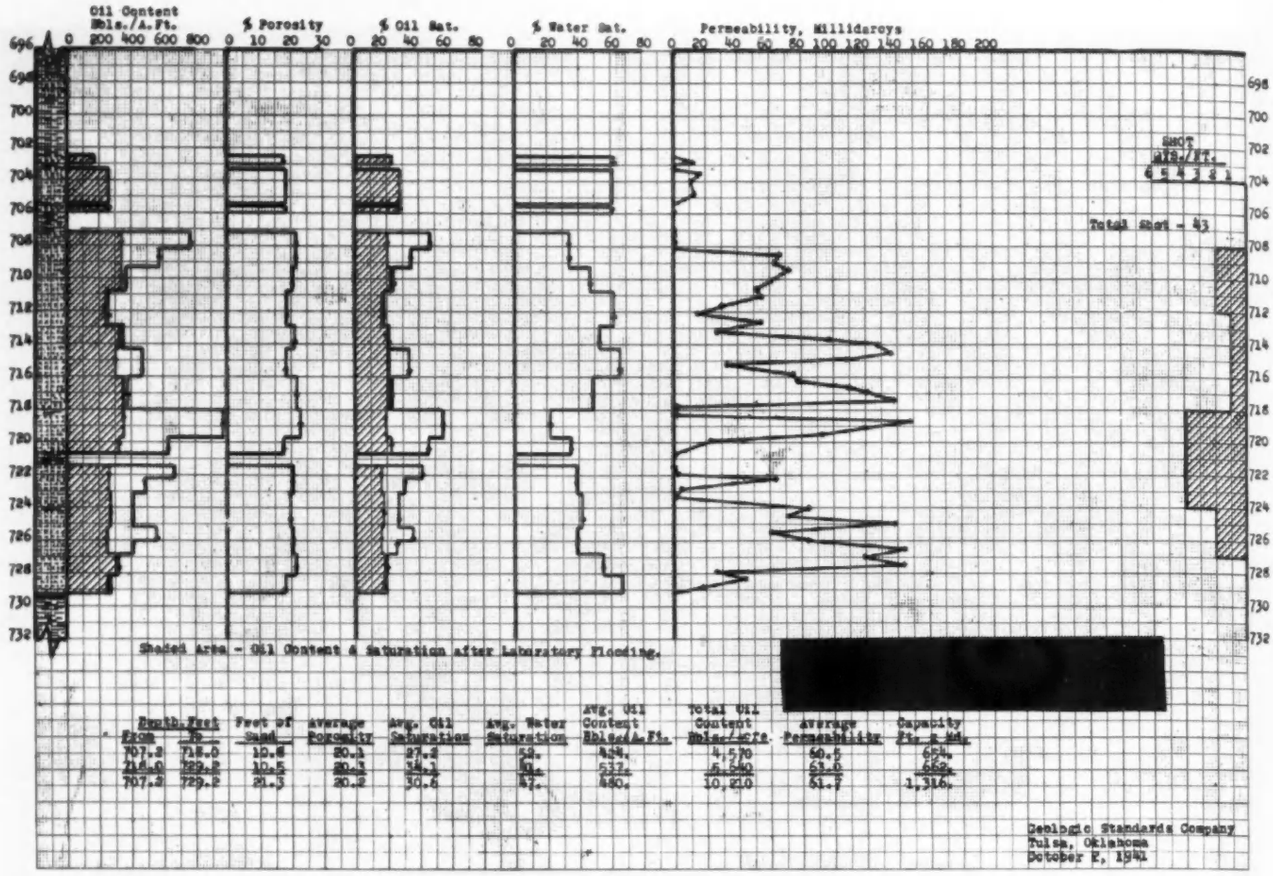


Depth. Feet From	To	Feet of Sand	Average Porosity	Avg. Oil Saturation	Avg. Water Saturation	Avg. Oil Content Bbls/A.Ft.	Total Oil Content Bbls./Acre	Average Permeability	Capacity Ft. x Md.
707.8	718.0	10.6	20.1	27.2	58.	434.	4,570	60.4	654.
718.0	729.2	10.5	20.3	34.1	51.	537.	5,640	63.0	662.
707.8	729.2	21.3	20.2	30.6	47.	480.	10,210	61.7	1,316.

FIGURE 6

flooding may equal approximately 20 percent while the residual content expressed as barrels per acre-foot will be 280 and 388 barrels per acre-foot respectively. In many cases it is possible to do without separate porosity measurements, provided sufficient data on initial and final oil content, together with water content expressed as barrels per acre-foot are available; however, there are other cases where it is absolutely essential to have the porosity measurement.

4. Oil Saturation

Percentage oil saturation like oil content is also of primary importance in evaluating a sand, for if the reservoir does not contain a sufficiently high oil saturation it certainly is not adaptable to secondary recovery even though all the other factors are favorable. Percentage saturation at the inception of the secondary-recovery plan is also extremely important in that it governs to a great degree the economic efficiency of recovery to be expected.[16] The higher the oil saturation the higher the resulting economic efficiency under similar conditions of operation. With reference to water flooding, the chief significance of this fact is that a sand of high oil saturation is far more adaptable to flooding and when flooded will give a much higher economic efficiency of recovery with far less water by-passing than a sand of relatively low oil saturation. Likewise a flood in a sand of high oil saturation normally can be pushed faster, that is, higher water injection rates may be used than for sands of low oil saturation. This factor has been substantiated time and again by actual field operations in the Mid-Continent and even in the North Texas areas.

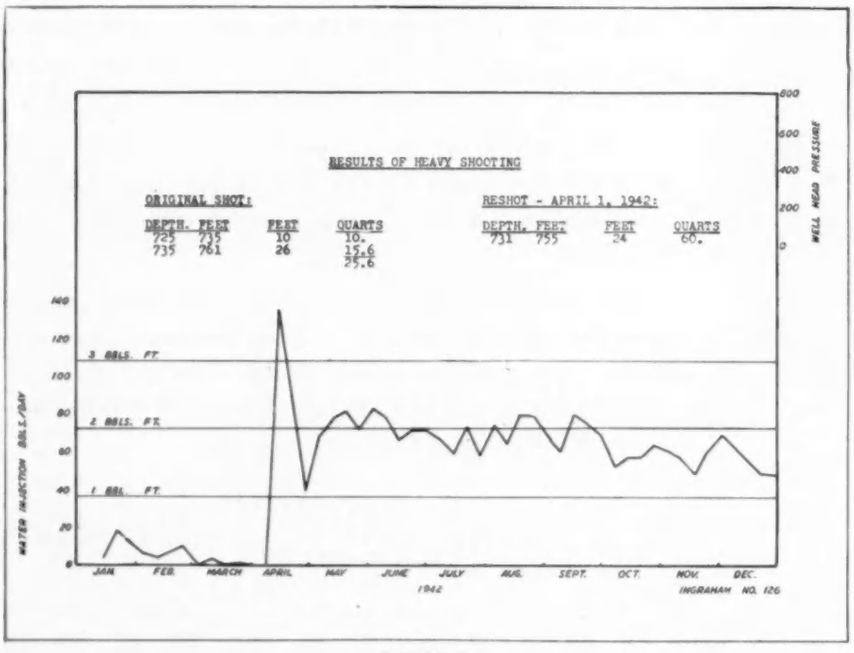


FIGURE 7

5. Water Saturation

Connate water saturation is another extremely important factor in the evaluation of a sand for secondary recovery. It is necessary to determine whether or not a sand normally may be expected to produce water. It is also very important in determining

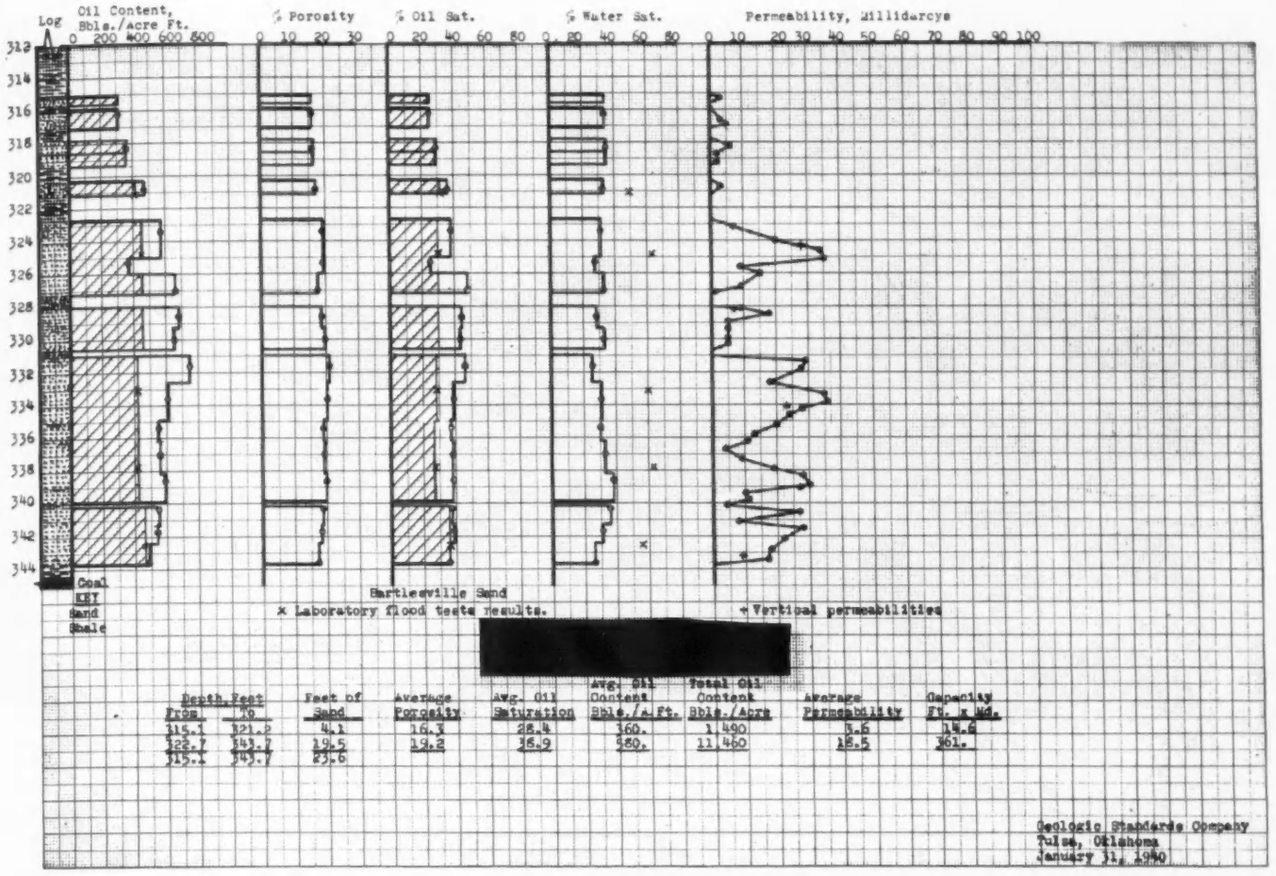


FIGURE 8

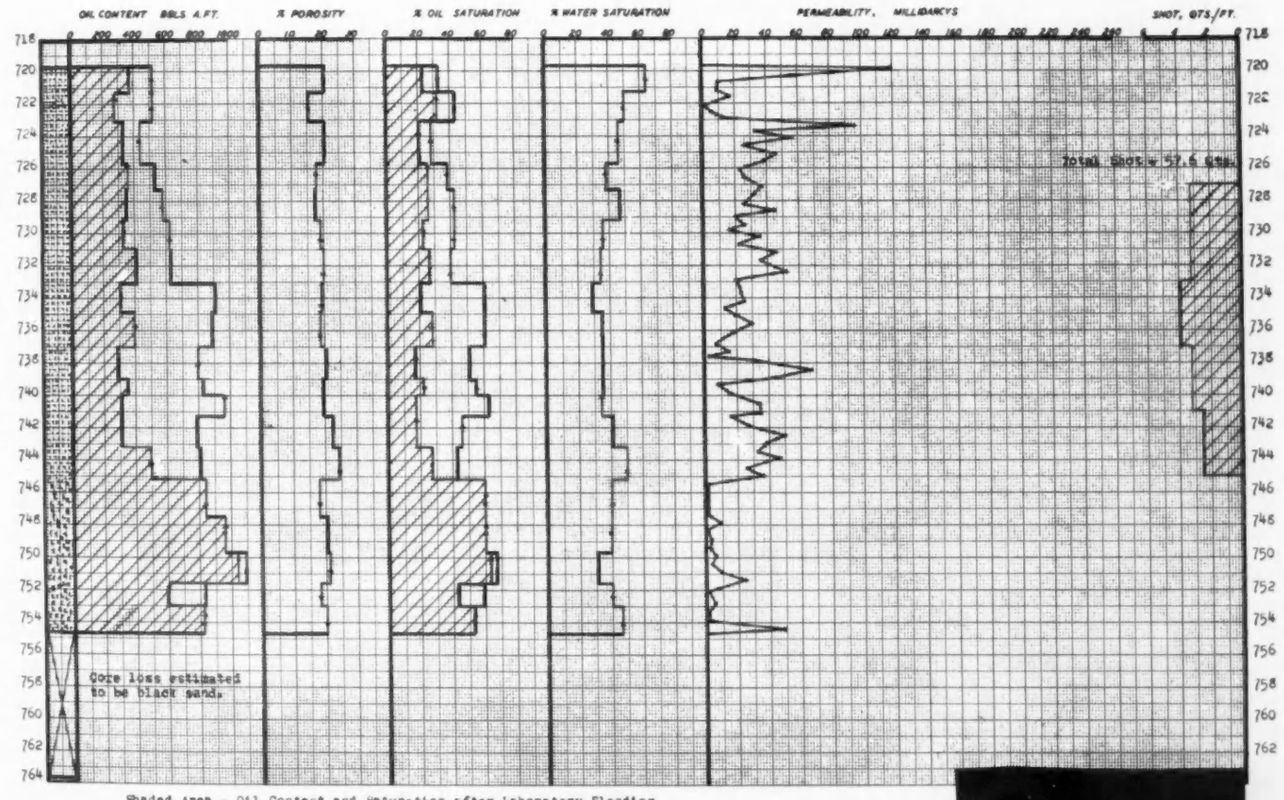


FIGURE 9

whether or not the sand area represented by any one core has been watered out by a flood already in action in the sand. Dickey and Bossler[17] have reported the great importance of connate water and the manner in which it apparently governs which method of secondary recovery is most adaptable. They point out that in some areas of Pennsylvania sands with very low oil saturation have been successfully repressured with air or gas while water flooding proved an utter failure. Connate water values are also of prime importance in those deeper sands from which the cores show an absolute minimum residual oil saturation. In such cases an accurate determination of connate water is necessary in order to calculate possible secondary recoverable oil by the use of a material balance.

6. Permeability

The factor of permeability plays a very important part in determining the size of shot, the injection pressure necessary, and the well spacing to be used. Although a uniform permeability is very desirable and nice to have for any flooding project, it certainly is not an absolute necessity. In fact experience has shown that irregular and erratic permeability profiles are more often the rule than the exception. Because of this it has been necessary to work with erratic permeabilities. Furthermore it has and is being proved that wide variations in permeabilities can in many cases be handled very successfully. Of course, if no specific measures are taken to shoot with consideration given to wide variations in permeability, serious difficulty may result from water, air or gas channelling. The permeability profile has been used in an endeavor to predict what the water intake rate would be for any given sand section; however, in the last two years it has become more common to first decide upon the most desirable injection rate to use and then shoot the sand in different wells according to the permeability in order to make it possible for each well to take the desired amount of water per day. This is a relatively new innovation in secondary recovery; however, for many years some companies have been shooting wells producing from sandstone for primary recovery more or less in accordance with permeability in order to obtain a good production rate. It has long been the custom to shoot the tighter or harder sands heavier in order to obtain better oil production. By the use of selective shooting in water flooding the same thing has been accomplished but the tight sand has been shot heavier in order to let in more water.

Figure 7 shows the relationship between intake rate expressed as barrels per foot of sand per day per 1000 pounds bottom-hole pressure and the shot factor.

Figure 8 shows a comparison between a light and heavy shot. This particular well, located in a tight section of the sand, was shot originally with a light shot but after only a few months the water injection rate fell off to an insignificant amount. The sand was then re-shot much heavier as indicated with a subsequent higher water-injection rate.

7. Flooding Tests

Laboratory flooding tests made on fresh core samples secured right from the field have proved helpful and beneficial in the valuation of sands for water flooding and also for operational control[18]. Such tests have wide application in shallow sand areas and for all cores which show the actual reservoir content rather than a flushed condition. Such tests for one thing indicate the residual oil saturation to be expected at the completion of the water flood, and also serve as a good criterion as to the floodability of any sand, together

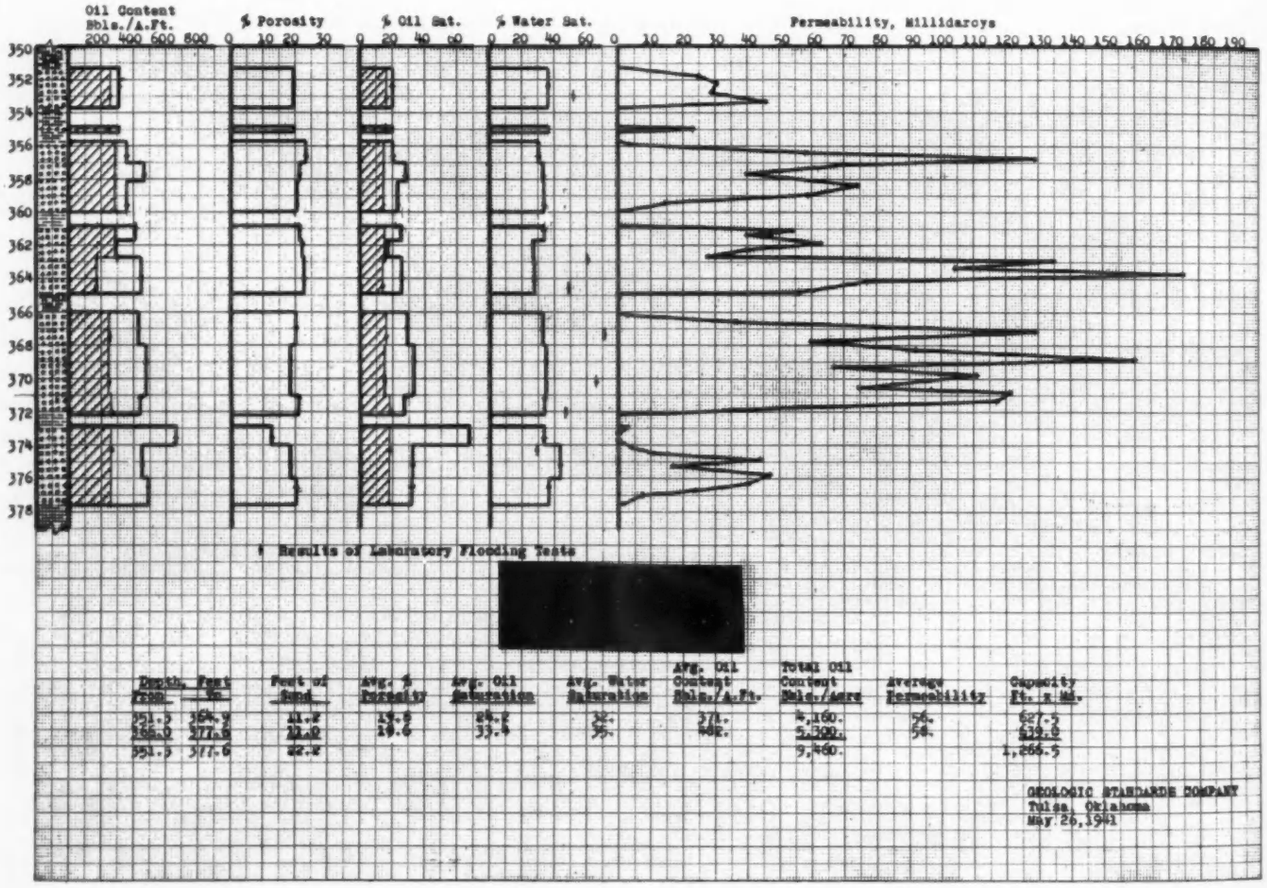
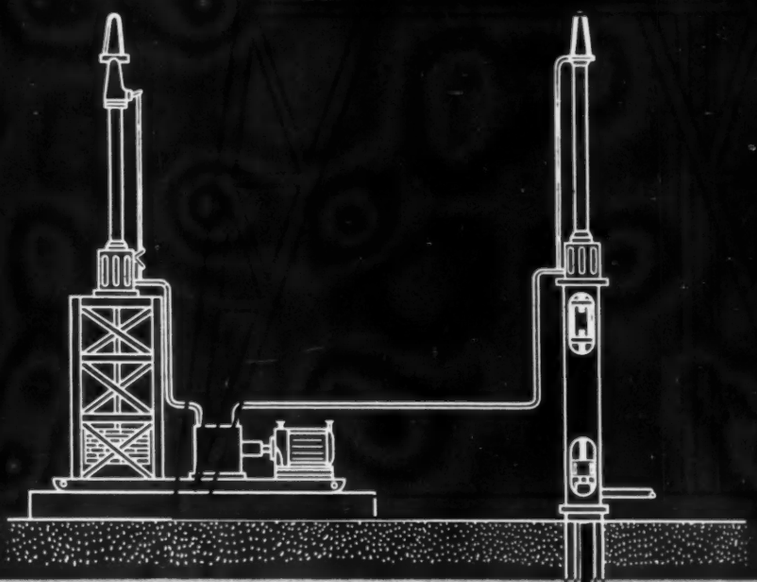


FIGURE 10

SAVE MANPOWER

On Your Oil Well Pumping



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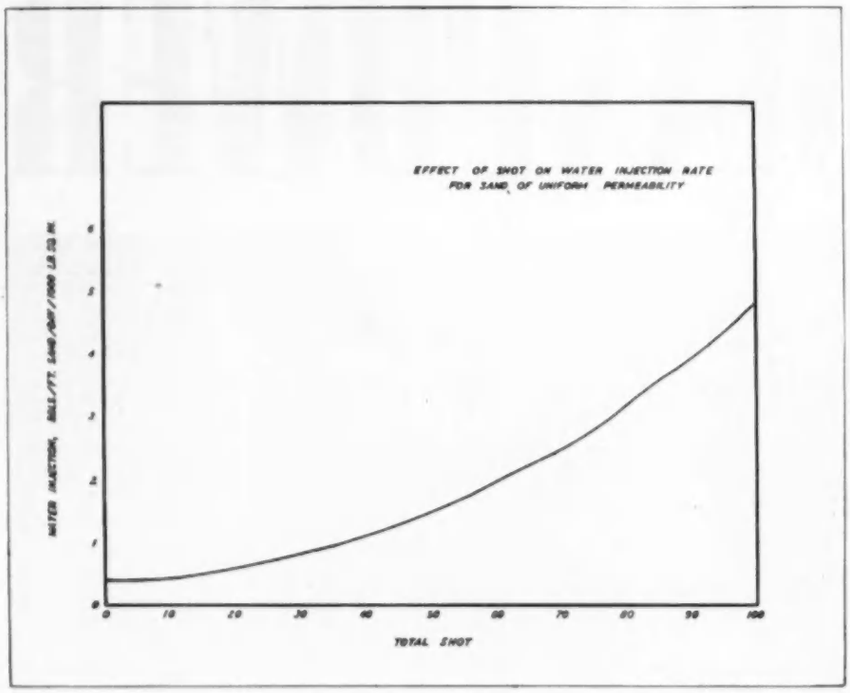

FIGURE 11

with the recovery efficiency to be expected. It has been found that the residual saturation after flooding may vary all the way from 15 to 30 percent. In many cases there is no apparent reason for this wide variation. Many times the belief has been expressed that oils of higher viscosities will leave higher residuals in the sand; however, such does not seem to be the rule. In other words, it has been found that oils of similar gravity and viscosity may have residual saturations after flooding varying all the way from 15 to 30 percent or from 250 to 600 barrels per acre-foot. It appears that Benner and Bartell[19], and Katz[20], may have an explanation for this wide variance in residual saturation. They have reported their findings on the effect of asphaltic and other impurities in crude oil, et cetera. Another very useful feature of these laboratory flooding tests in the Mid-Continent area has been to pick out and segregate certain sections of black non-floodable sand, (Figure 10). Such sand has a very high oil content and shows up extremely well when drilled in; however, it is asphaltic in nature and in most cases will not even take water. Figure 11 represents a core taken 25 feet from an old air-injection well. Note the recoverable oil with reference to water-flooding still remaining in the sand.

Interpretation and Use of Detailed Investigation

After the foregoing facts have been secured by coring and from laboratory analyses it is necessary to interpret them for practical application. Probably the first point to determine is whether or not the existing oil saturation and oil content is high enough to warrant secondary recovery. In order to do this it is necessary to calculate the estimated recoverable oil by the secondary method under consideration. If the method to be used is water flooding, the first step is to set out the 100-percent-maximum recoverable oil. It is next necessary to estimate what economic recovery efficiency might be expected. Inasmuch as the economic recovery efficiency of water flooding is dependent largely upon initial oil saturation together with the flooding rate or injection rate to be used, it is next necessary to decide what injection rate should be employed. The determination of such rate normally is arrived at by compromise or adjustment between the oil saturation existing in the sand and insofar as possible on the economic time limit. If the oil saturation is sufficiently high, such as 45 or 50 percent, it is then possible to use relatively higher injection rates and still obtain very nearly 100 percent economic recovery efficiency. On the other hand if the oil saturation is low it is necessary to hold back the injection rate if serious water by-passing is to be averted.

Assuming then that the exploratory cores show a sufficiently high anticipated oil recovery together with acceptable conditions of permeability, the next benefits to be gained from cores are operational in nature. Chief among

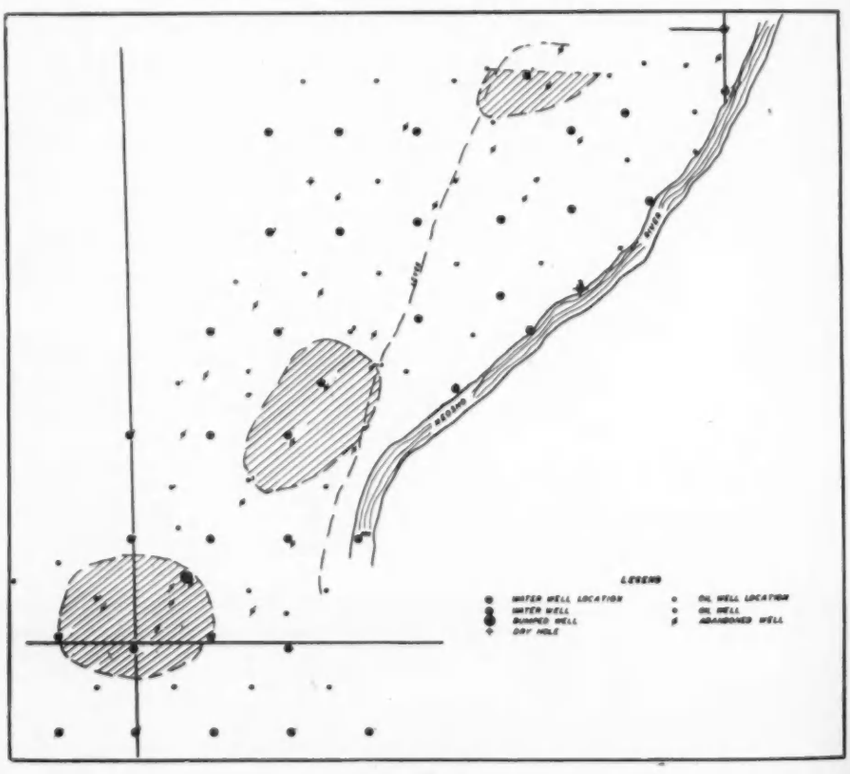

FIGURE 12
Map showing watered-out areas resulting from old holes improperly plugged.

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these is proper packer setting. In many cases a gas sand is found right above the oil pay which necessarily must be packed off if water channelling is to be prevented. Second, a determination of the proper size shot to use together with proper variations in the shot must be made. A mass of field data has shown that water-injection rates for any sand are dependent almost as much upon the size and type of shot used as upon permeability. In fact, permeability determinations in most instances are now used to govern the size and type of shot necessary. (Figure 12.) Selective shooting has been used sufficiently to indicate very decided advantages. In addition to the above, cores can also be used to a large extent to determine whether or not it seems practical to flow property rather than pump it. They also play a very important part in the development of an old property in locating watered-out areas[3]. When such watered-out areas are encountered it is necessary to rearrange the well pattern so as to prevent the location of producing wells in such watered-out zones.

After several cores have been obtained and the results of analysis secured it then is necessary to determine, first, whether or not the property is at all attractive for secondary-recovery operations and if so what type of operation should be used. If the cores show a good oil saturation with a high anticipated recovery and most of the existing wells on the property are in poor shape, it is normally desirable to figure on drilling all new wells, both in-puts and producers, in order to be assured of the best possible flooding results. On the other hand, if the existing pumping wells are uniformly spaced and are also in good condition and not producing water, there is little reason why they should not be used in the secondary development, thus necessitating only the drilling of new injection wells. There are also some cases where anticipated recovery by water flooding is so low as to make a new drilling campaign non-profitable; however, with the use of one or two new wells and the conversion of some of the old wells, it may be possible to establish a flood at small cost, with a resulting profitable operation. In other words, if a flood can be carried on with a development cost of only a couple of hundred dollars an acre, a 600 or 700 barrels per acre recovery might be very profitable. Certainly such a low recovery would not warrant any large expenditure for secondary development at the present price of oil.

When a property has been thoroughly investigated for secondary recovery, found favorable and the development commenced, the opinion is often held that most of the operator's problems are eliminated; however, such is not the case. If a flood is to be made successful, great and exacting control is necessary otherwise the entire venture may easily result in failure. During the operation of the flood, in-put rates should be checked regularly and closely controlled in order to prevent water by-passing. During the first year or two of operation it is normally necessary to check meter readings daily, especially on those wells pinched-in to prevent excessively high injection rates. Wellhead pressures should also be checked at regular intervals, such as two or three times a month. Checks on individual well production are also advantageous in order to keep tab on the progress of the flood. Likewise a great deal of information can be obtained and trouble averted by watching closely the injected-water to produced-oil ratio. This latter factor is important in that it is a relative measure of the effectiveness of the flooding action.

Conclusion

In conclusion it should be pointed out that secondary recovery definitely is no cure-all for each and every old stripper property. Secondary recovery is a specialty in itself and in many ways entirely different from all other operations in the oil industry. If secondary recovery is to be applied and made to be successful, detailed and careful investigation should be made of any property before a project is commenced. Likewise no one factor is sufficient to insure the success of such an operation. As the best example, in the past it has often been said that any property with a good past production history not in a water-drive field was adaptable for water flooding; however, this is entirely too broad a statement. There are already several cases in which such properties have been subjected to flooding solely on that basis and the result has been failure. On the other hand, this factor of past production history is important and should be considered. Likewise a secondary-recovery project is not something to be turned over to some orphan department for a plaything. More times than not when such has been the case the result has been a failure. Any water-flooding project should be a full-time job and should be given every consideration possible. There are, undoubtedly, large oil reserves available which can be secured by secondary recovery methods; however, great expense and study will be required to obtain them and at present this work is limited by the existing price of crude oil.

Crude Oil Prices

[*Continued from page 18*]

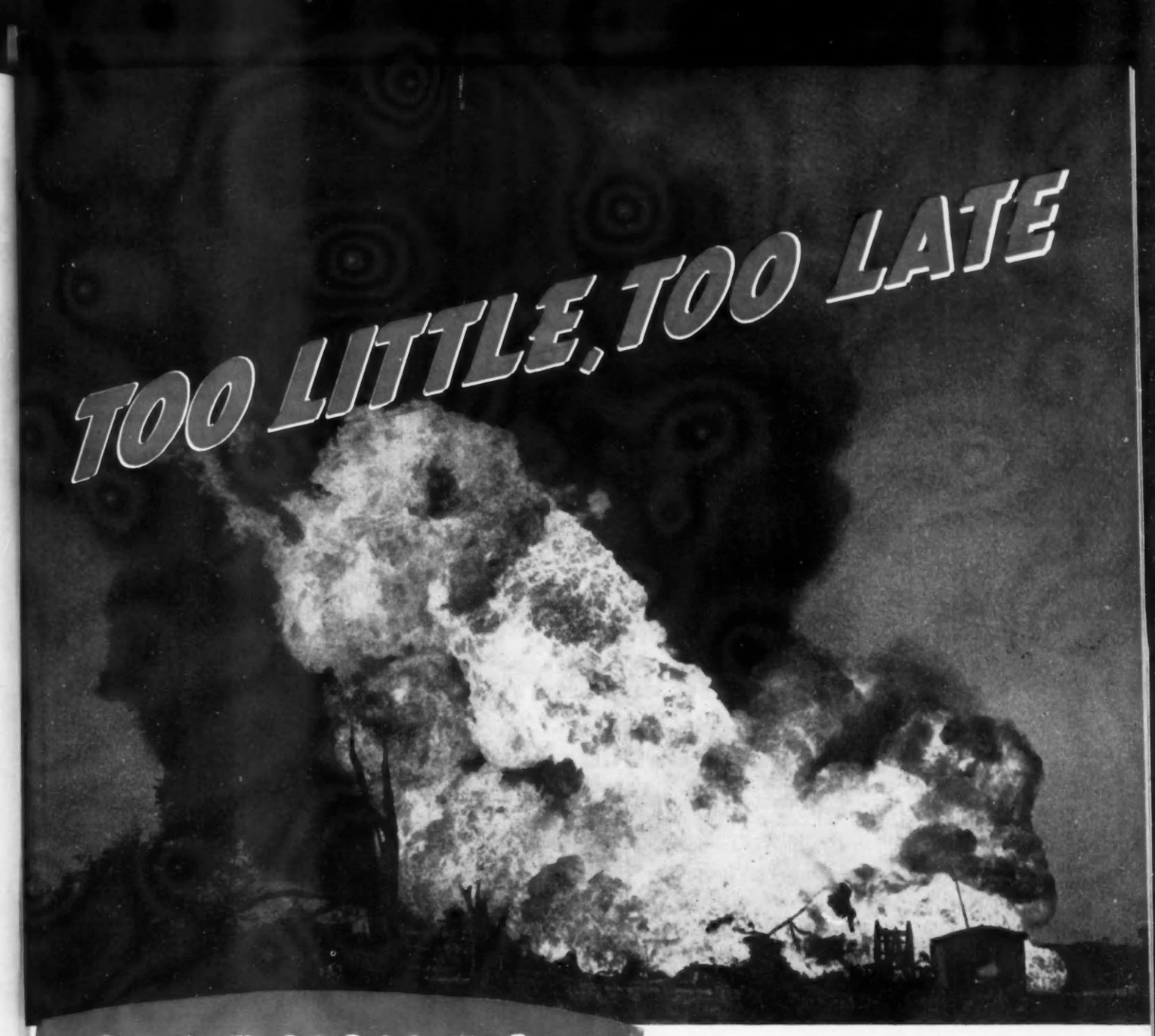
other peopled buildings. For the year, 1943, the normal expected demand for oils for this purpose totals 238 million barrels. But it appears now that the supply will be more than 69 million barrels, or 29 per cent short of the requirements. This is a serious curtailment which reduces the conveniences and comforts of living and jeopardizes the health of those persons whose homes and places of occupation are heated by petroleum.

From even this brief statement it must be clear that just as "price" is intimately related to the conservation of petroleum, so it is related to conservation in the broad sense of the term[4].

Price determines the character and extent of use and of the competition of other commodities. It also determines the amount of effort which may be expended in the search for reserves, for production therefrom, for transportation and refining. Price always has been the factor which equated supply and demand. In peacetime, price has been a variable moving to any level necessary to perform its equalizing function. But at present the cart and horse are reversed. Price is no longer the free-moving variable to equate supply and demand, but is a constant to restrict the supply to a preconcieved total of demand. This is a condition unfortunate for civilians hungry for petroleum products, but it is the case.

If federal control of prices were concerned only with the maximum wartime production of goods in order of their essentiality, there is no doubt that in the light of diminishing discoveries of new reserves for any given volume of exploratory effort, and in further view of the imminence of a shortage of supply, the price-control agency would long ago have accorded a general increase in the prices of crude petroleums and their products.

But it is conceded that from the viewpoint of the hold-the-linists, the problem of the prices of crude petroleum should not be considered apart from its relations to the price problems of other elements of the economy. The impact of changes in one set of commodity prices upon the costs of many other commodities, and hence upon many other prices, is too well understood to need restating here. However, when the control of the prices of a natural resource like petroleum and its derived products is part of a general price-freezing policy, production is stifled as emphasis is placed more and more upon the main objective, price immobility. When an increase in any price is refused because



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To date, not a single well equipped with Cameron 6000 lb. test pressure-operated drilling control units has suffered a blowout due to failure of the control equipment, which clearly establishes it as the industry's most dependable safeguard against destructive well pressures.

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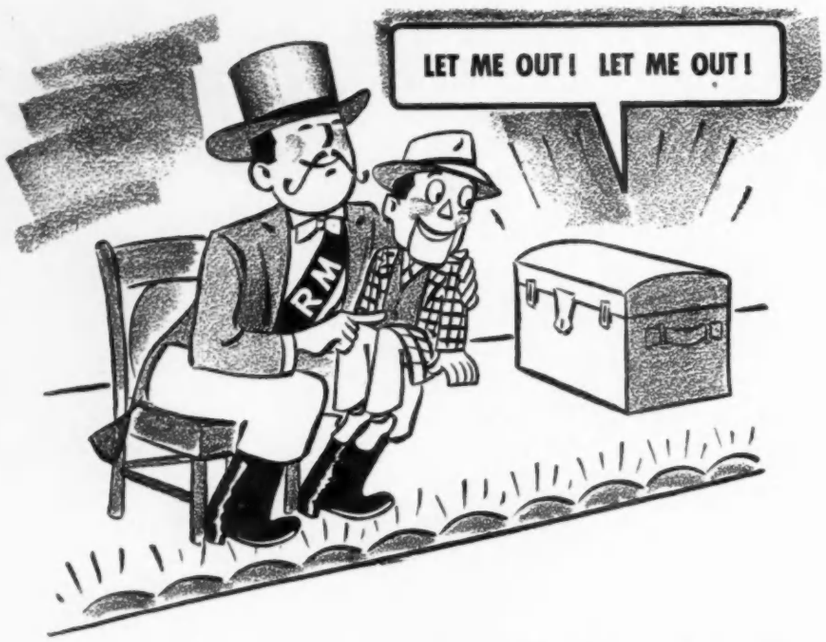

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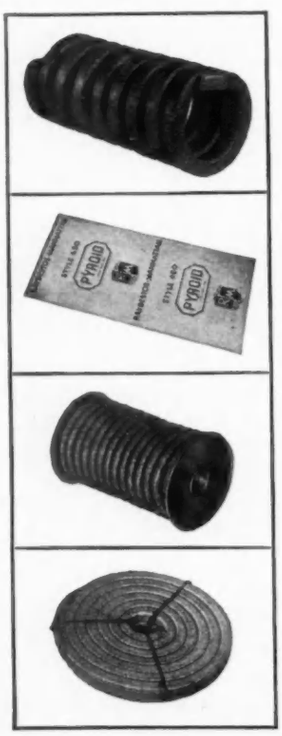

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of an assumed or possible effect on other prices in a system which brooks no change in average price, we have, to say the least, an impasse. We experience a diminution in economic welfare.

Moreover, there is a source of cost increases in the case of petroleum which is not related to changes in the unit prices of goods and services entering into its discovery and production. I refer, of course, again to that increment of cost arising out of the increasing difficulty of finding oil. This is a condition peculiar to petroleum. It should be recognized by the price-control authorities and due allowance made for it. Relatively moderate changes in prices, possible now to effect a gradual extension of productive capacity, would avoid violent changes in prices necessitated by shortages developed otherwise in the future. Violent price changes have always been accompanied by inefficiency and waste.

Our industry has learned to live under controls on its oil-production processes. Indeed many of the present oil-field controls have been initiated by the industry; all of them have been implemented by regulations promulgated by appropriate bodies of the compact member-states. But these controls have in the main been either of a police-power nature or designed to deal solely with technical aspects of oil production in order that perfection might be approached in the practice of the principles of conservation. Economic control, to the extent that it has been exercised, has been incidental. The over-all result has been relative freedom from violent changes in the factors of price, supply and demand, except as these have been affected by external forces. But now we are faced with federal economic controls of factors which are not readily susceptible to expression in formulas by technical experts—factors which logically change with the interplay of competitive forces.

Profound, perplexing questions are following in the wake of our current experiences. Many of them will go unanswered in the event of an early termination of the war and a prompt return to a wholesome degree of economic freedom. But there are other questions which must be answered soon if the prospect is for an indefinite prolongation of the war. Some of them center around the character of the existing price control: How long will crude prices be kept at their 1937 price level while the average of all commodity prices is now 20.5 per cent above the 1937 level? How much oil can we afford to waste or what further restriction of civilian consumption impose in order to avoid raising petroleum products prices by about 7 percent?

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PRACTICAL OPERATING *Hints* FOR THE DRILLING RIG

$5.00 will be paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, *Houston.*

1. OPERATING

Signal Lights Warn Of Oil Pressure Drop

Oil-flow actuated switches in circuits carrying lights on drawworks frame indicate engine danger.

As a means of warning of low oil pressure on drilling engines, one operator has assembled a set of signal lamps which serve the purpose effectively.

Equipment required to install this warning device includes a pair of small clear-lens auxiliary driving lamps such as are installed on many automobiles. Two lamps are used for two-engine drilling rigs, and three on rigs with more than two motors. Parking lamps like those frequently found on older cars will serve. These lamps are fitted to short pieces of heavy steam hose which are attached to brackets for bolting to a part of the drawworks above and slightly ahead of the cat-head shaft where it is not difficult for the driller to observe the signals. Cables to carry the current for operating the lamps are run from the rig lighting current and connected to a spring-operated instrument installed in the oil system.

These oil-pressure-indicating instruments on the side of the motors are spring loaded, and cause the circuit to be closed when the engine is down, or the oil pressure falls below a predetermined figure. When the oil pump builds up the normal operating pressure, the compression of the spring is overcome by the oil pressure which keeps the contact points separated so long as operation is normal and the engine is running. Just as soon as the pressure falls to a point where the spring tension is greater than the oil pressure, the points come in contact with each other, which closes the circuit and the indicating lamp for this particular engine is lighted, showing the driller immediately that service is required.

2. FUEL HANDLING

Butane Tank Setting Uses Trussed Skids

Proper elevation of the butane fuel tank at the rig setting may be made through provision of a skid which may be set on a plank base at ground level, but which will still support the tank at the desired height.

A sub base, composed of the usual paired skids, carries a series of small trusses which, in turn, are tied at their tops to form a platform wide enough to accommodate the two tanks which, in this case, serve as reserve fuel supply.

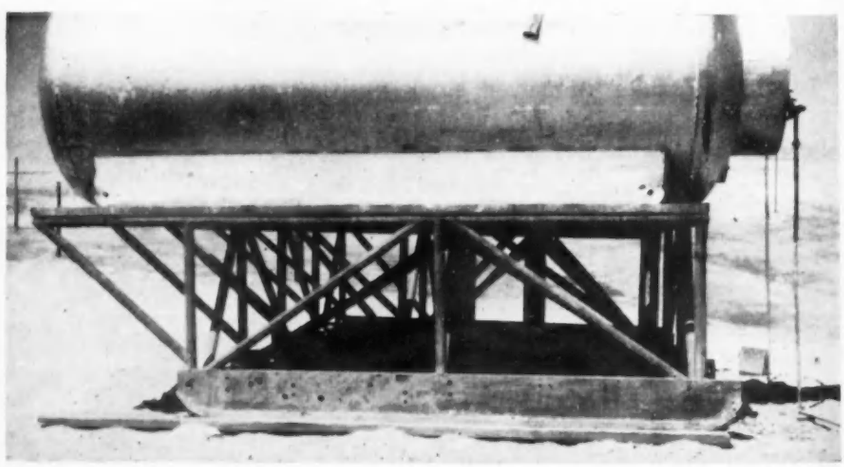
Strips of light plate, welded to the base and at intervals along the tank side, anchor the containers adequately to make them and the supporting members a single unit insofar as locating or handling is concerned.

3. MUD PUMPS

Drip Lubricators Insure Rod Supply

Supplying oil close to rod cuts splatter loss and aids in protecting the cups against breakage.

When lubrication is desired on the rods of a mud pump, one method of insuring steady and accurately regulable flow is to install a sight feed lubricator on each rod. One drilling company uses large cups for this work, mounting them on the ends of an inverted U-shaped bracket which is bolted to the pump frame between the two rods, and which carries the lubricators



Relatively light struts and diagonal braces characterize this sturdy tank frame which eliminates all need for blocking and consequent hazards to men and equipment.

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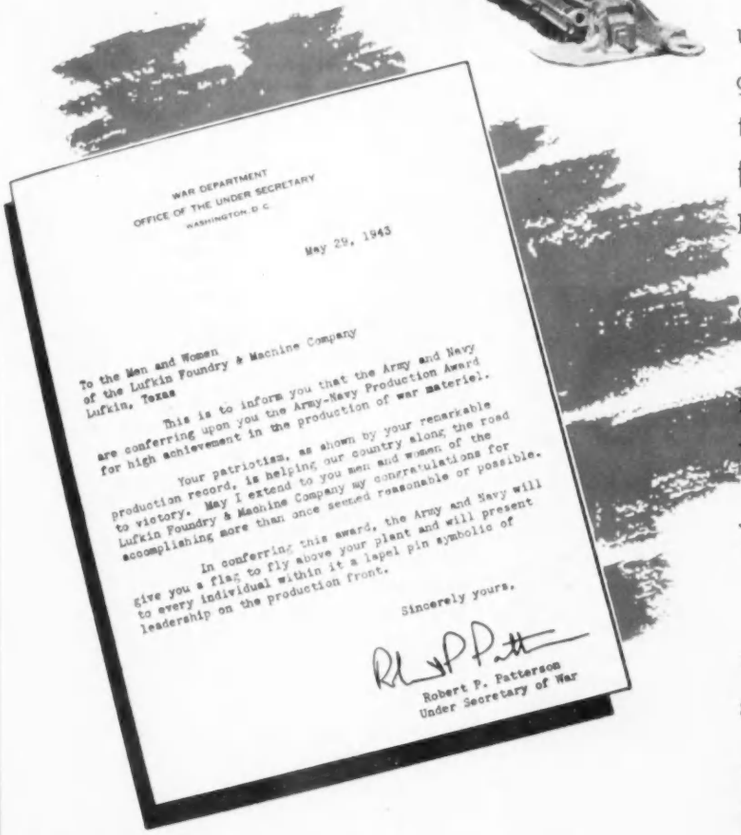
of man-power hours



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May 29, 1943

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This is to inform you that the Army and Navy are conferring upon you the Army-Navy Production Award for high achievement in the production of war materiel.

Your patriotism, as shown by your remarkable production record, is helping our country along the road to victory. May I extend to you men and women of the Lufkin Foundry & Machine Company my congratulations for accomplishing more than once seemed reasonable or possible.

In conferring this award, the Army and Navy will give you a flag to fly above your plant and will present to every individual within it a lapel pin symbolic of leadership on the production front.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

Millions of man-power hours, with the usual LUFKIN painstaking precision, have gone into the manufacture of parts for ships, tanks, guns, and trailers for our Armed forces—and the good work continues with production records being broken daily

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After Victory — When peace comes. Lufkin will again take its place of leadership in the production of oil field equipment as pioneers and developers of the application of reduction gears to oil well pumping.

Lufkin is applying new methods and new materials in the production of even a finer and more efficient unit for the days that are ahead.

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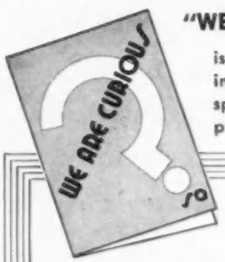

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close to the rods, through extended arms, tending to reduce splatter and loss of the oil as the drops fall upon the moving rods.

Lubricators slung within the pump body are less liable to damage than similar units mounted atop the casting. The location also aids filling and enables a close watch to be kept on the amount of lubricant within the glass. The slight amount of flexibility afforded the units by the mounting at the end of the relatively long and light arm or bracket also has proven of value in reducing the effect of vibration on either setting or life of the lubricators.

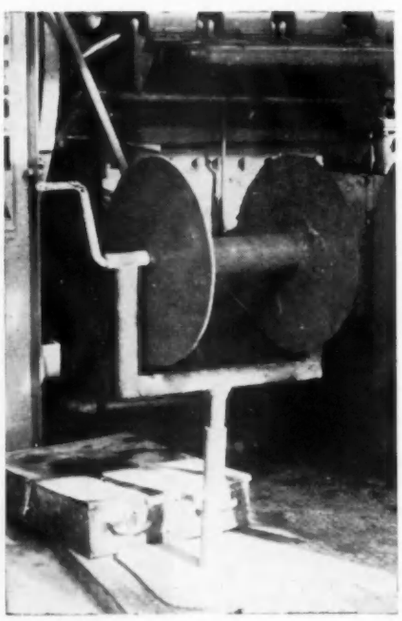
4. ROPE CARE

Portable Reel Saves Rig Floor Space

A PORTABLE reel, composed of a pipe drum with light steel flanges and a crank of sucker rod or similar material, rotating within pipe bearings, serves many purposes around the rig for storing or moving catlines, auxiliary hoist lines and short lengths of flexible wire and cordage.

By mounting the bracket on a single pipe support, sliding within a larger pipe welded to the flat base, one contractor makes a unit which may readily be set up in any convenient base section at the point of desired use.

The entire bracket, fitted with a hole through which it may be pinned or bolted to the working floor, may be shifted if desired. A single fastener is used with this unit, it being easy to stand on the base plate across from the pin while operating the reel, and thus to insure against its slewing around and possibly fouling the line or causing injury.



Slip socket and pinned base permit set-up at point where reel is required and quick transfer.

5. TRANSPORTATION

Skids Safeguard Line On Boiler Smoke-Box

One-inch rods at edge of boiler shell retain line and absorb contact against truck bed.

WHEN used for pulling the smoke-box end of a boiler onto the bed of a truck, the winch line is passed around the circumference of the barrel just behind the smoke stack, forming a noose with the hook used as slipknot.

There are two hazards in such a procedure: there is no positive means of keeping the winch line lead centered at the bottom of the barrel, thus there is danger that the noose might slip around the barrel and drop the boiler end; and when the smoke-box end reaches the truck bed there is danger of crushing the line between bed and boiler end.

By welding two 1-inch steel rods to the under side of the barrel, with ends turned up over the end of the sheet to avoid forming sharp corners, a channel is formed in which the line may be laid and effectively held both against slipping and against possible damage by the truck bed. These two skid shoes contact the steel lining of the truck bed and hold the shell itself from resting on it, thus affording ample clearance for the usual ¾-inch winch line.

Since the welding of the two skid irons on the boiler shell is on the smoke box, far from the nearest pressure point at the tube sheet, no damaging or deterioration of the shell is sustained.

☆ ☆ ☆ ☆ WASHINGTON ROUNDUP ☆ ☆ ☆ ☆

PAW and WLB Jurisdiction May Clear Up with New Plan

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New Government Agency for Acquiring Oil Outside U. S.

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Fuel Oil Situation on East Coast Still Uncertain

»

Committees Continue Study of Elk Hills Contract

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

PAW'S Materials Redistribution Program No. 2 is expected to issue during the coming week, with all difficulties and questions of overlapping jurisdiction with WPB ironed out.

Under the new program, all operators in all branches of the industry will be required to submit reports of surplus material, the term "surplus" being variously defined for the different classes of material, in some cases being material in excess of a 90 days' supply, in others material not used over a period of six months and not scheduled for use within 30 days, and in others still different standards will be set up. The idea is to provide a reasonable, workable basis for determination of what is surplus.

After the reports are in, operators applying for priorities assistance will be told where they can acquire the material they desire and will not be permitted new material unless what they need is not available in the industry.

WPB, it is said, has promised PAW it will not interfere with the program, with the usual exception that it can take over material which it may require for the rubber or other programs and cannot secure otherwise.

Also in the mill were delegations of authority on marketing for Districts 1 and 5 and on production for District 3 which will give the responsible field organizations greater autonomy in dealing with local problems. The delegation of authority given District 5 on production has been revised to provide additional power, including the authority in granting exceptions and determining spacing patterns and locations to permit deep wildcats less than two miles from the nearest well in old fields, and more freedom with respect to recompletions, plug-backs and reworking of old wells, and permission to grant exceptions on installation of pumping equipment under the density formula.

Setting up of a Petroleum Reserves Corporation as a subsidiary of Reconstruction Finance Corporation was the outstanding oil development of the past week in Washington.

Purpose of the corporation, Secretary of Commerce Jesse H. Jones announced, is to acquire petroleum, petroleum products and petroleum reserves outside the continental United States.

In informed circles, Jones' latest venture was seen as laying the ground work for either (1) the acquisition abroad of oil for military use when the expected domestic shortage occurs, (2) assistance to Latin-American countries in the development of oil industries, or (3) aiding the British in the expansion of Burmese, Indian and other fields which have not been lost to the enemy.

The Elk Hills contract was still under the Congressional microscope and was shown during the week to have been destined from the very date of its conception to be an orphan, with the comptroller general of the United States prepared to outlaw it had not the Department of Justice acted first.

Rail deliveries to the East Coast hit an all-time record during the week ended June 26, at 999,684 barrels daily, an increase of 29,149 barrels over the preceding week, it was shown by the PAW report.

The API stock index also showed marked recovery, rising from 27.6 to 29.5, but still was far below the 40 which is held to be the comfortable minimum.

Still better deliveries are expected this month, with completion of the big-inch to Philadelphia and New York in about two weeks permitting the first charge of oil. Movement will be at a comparatively low rate initially, increasing as the seven pumping stations still to be installed come into service.

"Gasoline stocks East of the Mississippi are falling off and there is a more serious prospect of more severe rationing in the Middle West than there has been to date," Davies pointed out. With the opening of the big-inch during the next two weeks, there will be further withdrawal of District 2 supplies for the East. The situation will become critical.

Also, it was disclosed, difficulties are expected to arise on the West Coast by October.

Commenting on General Brehon Somervell's estimate that 100,000,000 barrels of oil daily, not including aviation gasoline and lubricants, will be required for military purposes during the remainder of the year, Davies said the shortage in supply will not affect the war effort within a year "but a lot of things can happen to the civilian economic within a year."

"We may be able to supply that much more product to the army but we may not be able to get it out of crude runs to refineries, and may have to take it out of civilian use," Ickes explained. "The situation is not as cheerful as we would like."

No decision has been reached with respect to an increase in crude prices, Davies told newspapermen. He said that he and Brown had had a "very interesting introductory conversation" with Stabilization Director Vinson some days ago and another meeting would be held shortly.

As a result of the interruption of coal mining which now threatens to necessitate the rationing of that fuel next winter, PAW is reappraising its conversion program but has reached no conclusions, Ickes said.

Petroleum Reserve Corporation Will Seek Foreign Oil Supply

Still another government organization has been introduced into the oil situation with announcement by Secretary of Commerce Jesse H. Jones July 1 of the creation, "with the approval of the President", of an RFC subsidiary to be known as Petroleum Reserves Corporation.

Purpose of the corporation, it was set forth, is to acquire petroleum, petroleum products and petroleum reserves outside the continental United States.

The new organization appears to be Jones' own baby, for PAW officials queried as to its place in their program, asserted they knew nothing about it and had nothing to do with it, but Jones explained that "while no definite plans have been formulated, consideration is being given to one or two projects that may be of value in the war effort.

"The objective," he said, "is to look ahead, in the unfortunate event of a prolonged war."

There was considerable speculation at what the field of the new corporation would be, its announced purposes being so broad as apparently to permit any type of operation in oil anywhere in the world.

There was some comment that possibly Jones was desirous of avoiding a repetition in oil of the situation in rubber which resulted from the failure of his Rubber Reserve Company to purchase enough abroad prior to the loss of the Dutch East Indies to give this country an adequate stockpile, by preparing now to furnish foreign oil and products for military use when the United States encounters the shortage of which it has been repeatedly warned.

It was also considered possible that

PRC might enter the South American field with a view to its development as a major source when our own supplies fall short, or even might give assistance in the expansion of fields still held by the British in Burma, India and other areas, from which oil for the Japanese campaign might be secured.

Jones did not disclose what the "one or two projects" are that are under consideration, but the context of his statement indicated that the administration is determined to take no chances on prolonging the war by failing to maintain an adequate supply of oil for military use.

The charter of PRC outlines its objects and purposes as follows:

"To buy or otherwise acquire reserves of crude petroleum from sources outside the United States, including the purchase or acquisition of stock in corporations owning such reserves or interests therein, and to store, transport, produce, process, manufacture, sell, market and otherwise dispose of such crude petroleum and the products derived therefrom; and the corporation shall have the power and authority to do and perform all acts and things whatsoever necessary thereto, including, but without limitation, the power to borrow money and issue its secured or unsecured obligations therefor; to adopt and use a corporate seal; to make contracts; to sue and be sued; and to construct and operate outside the United States such refineries, pipe lines, storage tanks and other facilities as are necessary in connection with carrying out the objects and purposes of the corporation as above stated."

The caiptal stock of the corporation is set at $1,000,000, all to be held by the government.

Recovery Materials Expected from PAO No. 11

Secondary-recovery operations throughout the country, other than high-pressure maintenance and cycling, were given a general automatic exception from PAO No. 11 in supplement No. 6 to that order, issued by PAW June 30, to replace the temporary blanket exemption which had previously been granted.

Under the new order, "any person may accept delivery of, acquire, or use material for secondary-recovery crude-oil production operations (including the drilling of production and injection wells but excluding pressure-maintenance operations, salt-water-disposal operations, or high-pressure cycling operations) by the injection of air, gas, or water into the producing formation for the purpose of increasing or sustaining production therefrom; provided that this authorization shall extend only to the operator who actually conducts the specific injection program or to those operators who contribute money, property, or services as participants in the specific secondary-recovery program, and provided further that, as to the drilling of production wells, this authorization shall extend only to such operations conducted within a radius of 2000 feet of any air or gas injection well or within a radius of 1000 feet of any water-injection well."

Revenue Bureau Issues Capital and Expense Charge Regulations on Oil and Gas Wells

New regulations covering charges to capital and to expense in the case of oil and gas wells were issued by the Internal Revenue Bureau June 29, to govern the computation of income and excess-profits taxes for taxable years beginning after December 31, 1942.

All previous regulations on these points were specifically confined to taxable years beginning prior to January 1, 1943, and new rules for the current and subsequent years were laid down, as follows:

"(1) Items chargeable to capital or to expense at taxpayer's option:

"(i) Option with respect to intangible drilling and development costs incurred by an operator (one who holds a working or operating interest in any tract or parcel of land either as a fee owner or under a lease or any other form of contract granting working or operating rights) in the development of oil and gas properties: All expenditures made by an operator for wages, fuel, repairs, hauling, supplies, etc., incident to and necessary for the drilling of wells and the preparation of wells for the production of oil or gas, may, at the option of the operator, be deducted from gross income as an expense or charged to capital account. Such expenditures have for convenience been termed intangible drilling and development costs. They include the cost to operators of any drilling or development work (excluding amounts payable only out of production or the gross proceeds from production, and amounts properly allocable to cost of depreciable property) done for them by contractors under any form of contract, including turnkey contracts. Examples of them, which are used (a) in the all amounts paid for labor, fuel, repairs, hauling, and supplies, or any of them, which are used (a) in the drilling, shooting, and cleaning of wells; (b) in such clearing of ground, draining, road making, surveying, and geological work as are necessary in preparation for the drilling of wells; and (c) in the construction of such derricks, tanks, pipe lines, and other physical structures as are necessary for the drilling of wells and the preparation of wells for the production of oil or gas. In general, this option applies only to expenditures for those drilling and developing items which in themselves do not have a salvage value. For the purpose of this option labor, fuel, repairs, hauling, supplies, etc., are not considered as having a salvage value, even though used in connection with the installation of physical property which has a salvage value. Included in this option are all costs of drilling and development undertaken (directly or through a contract) by an operator of an oil and gas property whether incurred by him prior or subsequent to the formal grant or assignment to him of operating rights (a lease-hold interest or other form of operating rights, or working interest); except that in any case where any drilling or development project is undertaken for the grant or assignment of a fraction of the operating rights, only that part of the costs thereof which is attributable to such fractional interest is within this option. In the excepted cases, costs of the project undertaken, including depreciable equipment furnished, to the extent allocable to fractions of the operating rights held by others, must be capitalized as the depletable capital cost of the fractional interest thus acquired.

"(ii) If deductions for depreciation or depletion have either on the books of the taxpayer or in his returns of net income been included in the past in expense or other accounts, rather than specifically as depreciation or depletion, or if capital expenditures have been charged to expense in lieu of depreciation or depletion, a statement indicating the extent to which this practice has been carried should accompany the return.

"(2) Recovery of optional items, if capitalized:

"(i) Items returnable through depletion: If the taxpayer charges such expenditures as fall within the option to capital account, the amounts so capitalized and not deducted as a loss are returnable through depletion in so far as they are not represented by physical property. For the purposes of this section the expenditures for clearing ground, draining, road making, surveying, geological work, excavation, grading, and the drilling, shooting, and cleaning of wells, are considered not to be represented by physical property, and when charged to capital account are returnable through depletion.

"(ii) Items returnable through depreciation: If the taxpayer charges such expenditures as fall within the option to capital account, the amounts so capitalized and not deducted as a loss are returnable through depreciation insofar as they are represented by physical property. Such expenditures are amounts paid for wages, fuel, repairs, hauling, supplies, etc., used in the installation of casing and equipment and in the construction on the property of derricks and other physical structures.

"(iii) In the case of capitalized intangible drilling and development costs incurred under a contract, such costs shall be allocated between the foregoing classes of items for the purpose of determining the depletion and depreciation allowances.

"(iv) Option with respect to cost of non-productive wells: If the operator has elected to capitalize intangible drilling and development costs, then an additional option is accorded with respect to intangible drilling and development costs incurred in drilling a non-productive well. Such costs incurred in drilling a non-productive well may be deducted by the taxpayer as an ordinary loss provided a proper election is made in the return for the first taxable year beginning after December 31, 1942, in which such a non-productive well is completed. Such election with respect to intangible drilling and development costs of non-productive wells is a new

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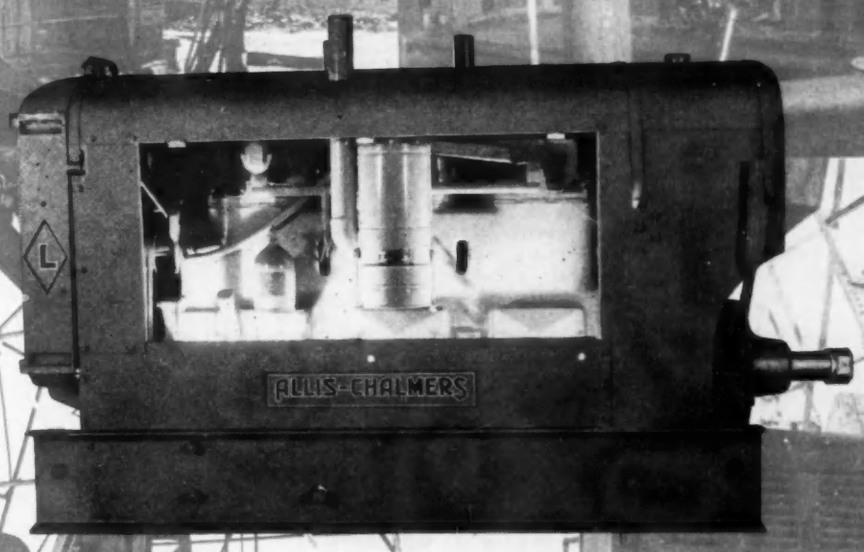

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election, and, when made, shall be binding for all subsequent years. Any taxpayer who incurs optional drilling and development costs in drilling a nonproductive well must make a clear statement of election under this option in the return for the first taxable year beginning after December 31, 1942, in which such non-productive well is completed. The absence of a clear indication in such return of an election to deduct as ordinary losses intangible drilling and development costs of non-productive wells shall be deemed to be an election to recover such costs through depletion to the extent that they are not represented by physical property, and through depreciation to the extent that they are represented by physical property.

"(3) Non-optional items distinguished:

"(i) Capital items. The option with respect to intangible drilling and development costs does not apply to expenditures by which the taxpayer acquires tangible property ordinarily considered as having a salvage value. Examples of such items are the costs of the actual materials in those structures which are constructed in the wells and on the property, and the cost of drilling tools, pipe, casing, tubing, tanks, engines, boilers, machines, etc. The option does not apply to any expenditures for wages, fuel, repairs, hauling, supplies, etc., in connection with equipment, facilities, or structures not incident to or necessary for the drilling of wells, such as structures for storing or treating oil or gas. These are capital items and are returnable through depreciation.

"(ii) Expense items. Expenditures which must be charged off as expense, regardless of the option provided by paragraph (b) of this section, are those for labor, fuel, repairs, hauling, supplies, etc., in connection with the operation of the wells and of other facilities on the property for the production of oil or gas.

"(4) Paragraph (b) of this section grants a new option with respect to intangible drilling and development costs incurred by an operator in a taxable year beginning after December 31, 1942, in the development of oil and gas properties, and requires a new election under such option. Any operator who incurs such costs must make a clear statement of election under this option in the return for the first taxable year beginning after December 31, 1942, in which such costs are incurred. The absence of a clear indication in such return of an election to deduct as expenses intangible drilling and development costs shall be deemed to be an election to recover such costs through depletion to the extent that they are not represented by physical property, and through depreciation to the extent that they are represented by physical property. This election is binding for all subsequent years."

Further Cut in Value of Ration Coupons Faced by East Coast Fuel Oil Users

Fuel oil consumers on the East Coast will start out next winter, as they did last year, with coupons worth 10 gallons each, it was announced by OPA June 30, but there was no promise that the value would not be cut, as it was last winter.

At the same time, PAW warned that although the program for supplying heating oil this year contemplates the filling of consumer tanks as soon after July 1 as possible, it was probable that many consumers would not get oil until late in the summer.

The delay, Ralph Davies said, will be due both "to the necessity of utilizing fuel oil tank trucks in the most efficient wartime manner possible and to the lack of adequate manpower in the distributing branch of the petroleum industry."

OPA also announced that there was no intention currently of making a further reduction in the value of A, B or C gasoline coupons in the Eastern "famine" area, despite the fact that PAW had certified less gasoline for civilian transportation during the coming quarter.

Brown's statement dispelled widespread rumors that A coupons were to be invalidated, necessitating the laying up of thousands of automobiles.

The OPA head "passed the buck" for short supplies to PAW, pointing out that the supply of gasoline is the responsibility of the latter and explaining that "if this agency certifies there is less gasoline for civilian use in the Eastern states, the OPA has no alternative but to cut however severe the consequences."

"It is the hope of OPA," Brown said, "that sufficient gasoline can be brought into the northeastern shortage area to make any further reduction in civilian use unnecessary."

A-card holders, however, did get a jolt in the disclosure that they would not be eligible for tire replacements because of a shortage of casings, but no restrictions were imposed on their ability to have tires recapped without any formalities.

Meanwhile, adding up figures on prospective transportation facilities furnished by Transportation Director Eastman and ignoring PAW warnings of increasing military demand, Senator James M. Mead of New York predicted that the Eastern shortage "is now well on the way to solution and will be greatly improved by February 1, 1944."

Mead's statement, apparently made for home consumption since he stressed the fact that additional supplies would move to New York state by the Great Lakes, was based on Eastman's estimate that by next February 1,600,000 barrels daily would be moving into District 1, exclusive of tanker or inland waterways deliveries, a figure, he said, which represents "a substantial increase over the normal prewar requirements of this region."

"The situation looks much more favorable for the coming winter," he said. "Indeed, we may expect with confidence that all essential needs will be met."

Eastern Congressmen who have been fighting for more gasoline, determined to make an appeal to the White House for relaxation of rationing restrictions, and on July 2 appointed Representative Hartley of New Jersey to seek an appointment with either War Mobilization Director Byrnes or President Roosevelt.

At a conference of the group it was charged that the request for an increase in crude prices was designed to give support to striking coal miners for an increase in wages.

Cole Act and Interstate Compact Extended

Extensions of the Cole Act providing for government construction of pipe lines and the Interstate Oil Compact were assured last week by quick Congressional action.

Already passed by the House, the Cole Act two-year extension was approved by the Senate without further debate than the voicing of criticisms of Ickes by Senators Clark of Missouri and Pepper of Florida.

The measure was passed by the Senate July 1 and sent to the White House for signature.

A four-year extension of the Interstate Oil Compact from next September 1, requested by President Roosevelt June 28, was approved by the House without opposition and favorably reported by the Senate committee the following day.

When the pipe line act came up in the Senate June 29, Clark said he recognized the necessity for the legislation but asserted there is no question that "Ickes' whole attitude toward the big oil companies building these pipe lines in the Texas field largely controlled by the big oil companies is calculated after the war to give the big oil companies the pipe lines for nothing."

Pepper charged the oil administrator with "intellectual dishonesty" in withholding from Congress information about the facilities available for the movement of oil to the East, with respect to the Florida canal proposal which PAW fought.

In his letter to Congress, the President declared that the Interstate Oil Compact "designed to permit state legislation relating to the conservation of petroleum and gas, also has resulted in an effective collaboration of the oil-producing states which are parties thereto upon oil problems of general import."

The legislation extending the Cole Pipe-Line Act was approved by President Roosevelt July 1.

At a press conference, also on July 1, Ickes answered Clark's charges that he was influenced by the big oil companies.

"I would like a bill of particulars. I would like to know in what respects I have been influenced; perhaps it was in connection with the Elk Hills contract. This department, and not the Department of Justice, first called attention to the inequities of that contract; I guess that the influence upon me of the big companies must go on vacation occasionally."

Cancelled Elk Hills Contract Still Under Scrutiny by House Committees

Members of House committees last week continued their exploration of the Elk Hills contract, with indications that it brought to an end an era of "co-operative" administration of the Naval reserves, marked by the Teapot Dome scandal of the twenties, and would pave the way for a policy of condemnation only in all cases where the government sought to obtain privately-owned properties.

An agreement was reached between the Public Lands Committee and a Naval Affairs subcommittee, also interested in the deal, to exchange information developed in their respective investigations and, later, to hold joint hearings so as to prevent duplication. The correspondent Senate committees also have indicated an intention of studying the Navy-Standard Oil Company of California contract, but have not yet gotten under way.

Testifying before the Public Lands Committee June 29, Undersecretary of the Interior Abe Fortas, whose criticism of the contract precipitated the sequence of events which led to its cancellation last month, explained that his disapproval of the deal was based on an analysis of the agreement from the standpoint of the government's best interest, without any reference to the technical oil question involved.

Foras disclosed that the director of the Geological Survey had held the contract equitable and in the public interest, but told the committee neither he nor Secretary Ickes concurred in that opinion.

Fortas disclosed that he had two basic objections to the contract: the first, that Standard is afforded the exclusive right to produce all of the government's share of the production to the exclusion of other companies, and the second, the very indefinite provision for repayment of the government's oil after the end of the war emergency or a five-year period, by earmarking one third of Standard's one third of the output which might not exceed 750 barrels daily if the Navy decided to practically close the field in.

At the same time, he said, the contract gave the Navy an alternate way of securing repayment of its share of the 27,500,000 barrels of oil which might be withdrawn from the reserve during the primary period, by taking Standard refined products. But, he pointed out, in that case, the Navy was to figure those products at Standard's selling price, whereas the Navy, a large buyer under bids, normally purchased its requirements at much less than contractors' selling prices. This type of payment, he said, would not only make the products more expensive to the Navy but would react adversely against other oil companies which normally bid for Navy business.

Assistant Attorney General Norman Littell, whose report holding the contract illegal and invalid as well as not in the public interest directly led to its abrogation, also appeared before the committee again to clean up certain phases of the agreement which he said had not been fully developed previously.

Littell attacked the formula by which the "64-36" agreement holding the Navy and the company entitled, respectively, to those proportions of the reserve's oil. Those percentages, he said, were based on the "acre-foot" computation and gave the company more than it would have gotten by more usual methods of arriving at the respective interests of the two parties.

Littell also criticised the contract provision giving the company 50 per cent of the natural gasoline out of the wet gas it processed for the Navy while the Navy got only its 64 percent of the wet gas it processed in its plant. The latter provision, he said, was all right but the company charge for processing was in sharp contrast with an agreement of Standard Gasoline Corporation with General Petroleum Corporation at Kettleman Hills, where it processed the wet gas for approximately 10 percent.

The Justice Department official, however, expressed his deepest concern over the "uncertainty" as to just what was conveyed by the deed the company gave the Navy to some 8000-odd acres of land at $10 per acre.

On its face, he said, the deed conveyed a fee simple title to the government of the land, including everything above and everything below the surface, and was approved as such by the title lawyers of the department, who were not concerned with the contract. But the contract, he went on, expressly reserves the underlying minerals and by "subtle" provisions transforms a fee simple contract into a mere transfer of the surface, which, he declared, is "absolutely worthless" of itself.

Declaring that wells drilled by Standard on lands contiguous to Navy holdings were draining the government oil, Representative James O'Connor of Montana laid before the committee a resolution authorizing the department to institute condemnation proceedings immediately to secure the company's lands in the reserve.

The resolution also would empower the navy to acquire, by either purchase or condemnation, lands within one mile of the limits of the reserve.

The Navy never had a chance of operating under the contract, Comptroller General Lindsay Warren told the committee June 30.

The contract was not submitted to the General Accounting Office for an advance opinion on its legality, as is frequently done, and did not reach the office until January 12, last, nearly two months after its execution, but the first official who saw the document immediately brought it to his attention and "on account of the very nature of it and on account of the past history" he at once ordered a careful study by his legal staff, Warren testified.

Warren laid before the committee a memorandum prepared by E. L. Fisher, assistant general counsel, dealing with the validity of the contract but not going into its "economic wisdom," since the GAO has no authority to determine whether a Government agency makes a "bad bargain."

Fisher held that while the contract purported to be made under the authority of letters from the President, Executive Orders and Acts of Congress, the only such document applicable was the Act of June 30, 1938, and that law prohibited some of the things the Navy attempted to provide for in the agreement.

"The contract was executed without authority of law and therefore is invalid and of no binding effect upon the United States," Fisher held.

The memorandum asserted that provisions of the contract under which Standard would be reimbursed out of Navy's share of the oil for its expenditures of operation and in providing facilities were not authorized by law, and held also that the purchase of Standard's property was authorized under the 1938 act only in the event the Secretary of the Navy was unable to accomplish an exchange, but that there had been no showing that such exchanges could not be made.

"With the exception of fraud and collusion and with the possibility that this contract may be a good faith attempt to conserve the oil reserves, the contract is strikingly similar in its basic principles to those involved in the well-known Elk Hills and Teapot Dome oil scandals," Fisher said, "and its provisions regarding operation of the oil lands appear even to be more extensive. And with the exception of fraud and collusion and the question of conserving the resources, the court declared those contracts illegal and void for substantially the same reasons as recited above."

Rationing Will Continue Under OPA With PAW Advice

Oil rationing policies will continue to be under OPA, but PAW, WPB, ODT and War Food Administration will be permitted to advise as to their desirability, under an over-all policy for the handling of supply and distribution problems announced by WPB Chairman Donald M. Nelson July 2.

The principal change set up by the agreement is the establishment of an advisory body. The Petroleum Rationing Policy Committee, consisting of representatives of the five agencies, of which the price administrator will be chairman. The price administrator will make all decisions after obtaining the advice of the committee, but dissents from his decisions may be appealed to Nelson. Rationing operations will continue to be handled by OPA.

Maintenance of petroleum supply and its distribution down to and including the retail outlet will continue to be the responsibility of PAW. Quotas for the various rationed areas are to follow the pattern of rationed demand as shown by returned used coupons.

Available petroleum supplies of rationed petroleum products where shortages exist are to be devised by the petroleum administrator after consultation

with a Petroleum Requirements Committee of which the petroleum administrator is chairman and composed of representatives of the principal agencies having substantial claim for petroleum, including OPA, ODT and WPB. Dissents from these allocations also may be appealed to the chairman of WPB.

In addition to ODT's transportation responsibilities and its functions of presenting to PAW estimates of petroleum requirements for all classes of transportation, that agency will determine the distribution of petroleum products among the various classes of transport, including passenger cars within the total amount allotted for this purpose by PAW. The present arrangement by which ODT certifies to OPA the amount of gasoline to be rationed to each operator of commercial vehicles will also continue. The certifications are binding upon OPA, unless the total gallonage thus certified is in excess of the quota for this purpose.

WPB will determine the relative essentiality and priority of the various competing industrial and civilian uses for all petroleum products, including gasoline. OPA is to notify WPB if it believes any such determinations to be impractical from an operating or administrative standpoint.

The agreement, Nelson said, sets forth clear lines of responsibility for the operations of each agency concerned and provides two channels for complete review of petroleum allocation and rationing policies, the Petroleum Requirements Committee and the Petroleum Rationing Policy Committee.

Levorsen Tells Senate Of Need for Price Raise

Expressing the belief that there may be as much as 60 billion barrels of oil yet to be discovered in the United States and pointing out that this amount must be found during the next 20 years to maintain present ratios of reserves to consumption, A. I. Levorsen, Tulsa geologist, told a senate appropriations subcommittee last week that the "proved and tested method" of encouraging exploration is to provide an incentive through adequate prices for crude oil.

Levorsen's testimony was made public when the subcommittee sent the $71,000,000,000 Army appropriation bill to the Senate. He was called before the committee by Senator Thomas of Oklahoma because of the disclosure of Army officials of the tremendous amount of oil required for military purposes and reports of an impending shortage.

"It is my conviction," Levorsen said, "that we are fast approaching a serious shortage in our supplies of producible crude oil in the United States; that there are undiscovered oil resources in quantities adequate to supply the national needs of the next generation; that the only way to find this oil is by drilling large numbers of wildcat wells; that something should be done without further delay to stimulate the necessary exploratory drilling, and that the proved and tested method of accomplishing this is to raise the price of oil sufficiently to provide the needed incentive to increase both the volume and the efficiency of exploration until the reserves are again brought to a safe relationship to requirements.

"The oil industry has many times in its history arrived at the point where it was fearful that the future supplies were inadequate for the needs. Each time this fear stimulated increased prices and increased wildcatting which soon corrected the situation. At best, wildcatting for oil is a risky business. Those who are engaged in wildcatting and who have the 'know how' of many years of experience should not be driven out of the business. Rather they should be given every encouragement to go ahead and continue to devote their best efforts to discover this resource which has become such a vital part of our national well-being."

OPA Sets Price Ceiling On Used Steel Tanks

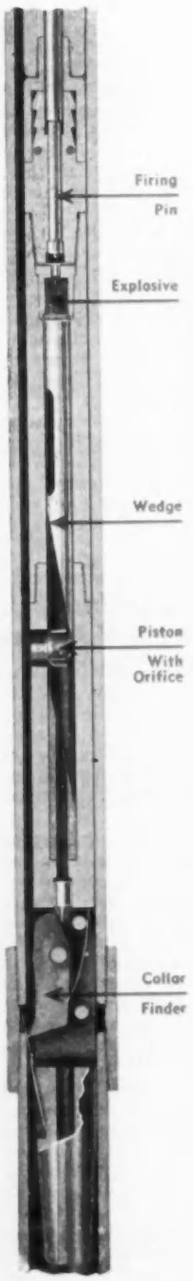
Specific maximum prices for reusable steel storage tanks, field assembled, were set by OPA June 29 with a view to simplifying and speeding up the large volume of transfers of tanks which has resulted from the curtailment of new tank production.

Schedules set up by OPA provided prices ranging from $92 for a 65-gallon bolted black plate standing tank with steel roof to $2720 for a 10,000-gallon tank and, for the same capacities, from $117 to $3454 for galvanized tanks with

KINLEY

Tubing Perforator

Controls the size of Holes in Tubing for Gas Lifting



HOW THE PERFORATOR OPERATES

In operation the Perforator is run into the well on a Halliburton wire line through a lubricator.

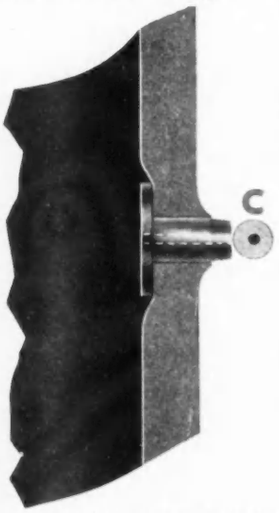
When the desired depth is reached, where the Orifice is to be placed, the line is then picked up. As the Perforator passes the first tubing collar on the pick-up, the collar finder releases the trigger and anchors the Perforator in the collar.

The safety pin is sheared by picking up on the line and dropping several times. The charge of explosive is then fired by the same method.

The explosive forces the wedge downward and drives the piston outward. The Orifice, having been fastened to the piston, is forced through the tubing, as then the highest point of the wedge has passed the piston.

After the shot has been made, the undercut part of the wedge is opposite the piston, which provides clearance and also trips the collar trigger; this action allows the gun to drop, thus indicating that the orifice has been punched through the tubing.

If tubing becomes stopped up, a ¼" hole (A) can be punched into the tubing, to allow circulation for killing the well. When sanding up occurs between tubing and casing, this method can also be used to loosen tubing.



C Holes in buttons range in size from 1/64" up to ⅛". See A.

A Hole to allow circulation for killing the well.
B Orifice Button in place.

M. M. KINLEY CO.

Phones: Day or Night K 3-1221; Res. K 3-3649
P. O. Box 6177, Houston, Texas

steel roof. Prices for open top tanks ranged from $82 to $1491 for black plate and $104 to $1894 for galvanized. In addition allowances were established for dismantling and cleaning.

Maximum prices for reusable steel riveted and welded tanks were established also, at $45 per net ton of iron and steel in the tank and fittings, plus $13 per net ton if the tank has been properly dismantled for reassembly, plus $2 per net ton if thoroughly cleaned.

Prices for tanks needing replacement parts to make them whole are halved from the schedules noted above.

Sellers of reusable steel storage tanks with floating or balloon roofs or tanks of spherical shape must file proposed sale prices with the iron and steel branch of OPA in Washington, and if not rejected within seven days may consider their proposed price approved.

Ban on Fuel for New Burners Made Nationwide

Bringing the entire country under the prohibition on deliveries of fuel oil for consumption in new or converted installations, PAW on June 29 re-issued WPB Order L-56 as Petroleum Distribution Order No. 13.

The new order extends the prohibition on deliveries for new installations to Alabama, Mississippi, Louisiana, Arkansas, Texas, New Mexico, Idaho, Montana, Wyoming, Utah, Colorado, Arizona, Nevada and California, heretofore exempt from the rule which applied to the remainder of the country.

However, it was provided, where new space heaters have been acquired under OPA Ration Order No. 9, the delivery of fuel oil will be permitted.

Also incorporated in the order was a ban on the delivery of fuel oil for weed control purposes anywhere in the United States, largely affecting railroads which normally burn off the weeds along their rights of way.

Announcing the new order, Ickes explained it had been stiffened because "our seven-ocean Navy that is rapidly coming into existence must have fuel oil to propel its ships.

"We are building the greatest number and tonnage of cargo ships in one year that the world has ever seen," he said. "Almost every one of these ships uses fuel oil. Many of our great munitions plants cannot burn anything but fuel oil for power. Many parts of our great railroad systems, groaning under the greatest tonnage of freight in their history, plus huge movements of soldiers, have thousands of miles of track in areas where fuel oil is the only possible source of power.

"All of these uses, plus many others that are equally vital to direct war purposes, add up to an enormous demand for fuel oil. These demands must be met."

Seek Spacing Order For New Stephens Field

Continental Oil Company has requested 40-acre proration units in the new Stephens field, Montague County, Texas. Production was found in the Mississippi lime at 6021 feet and the discovery well flowed 390 barrels of 48.6-gravity oil.

Pennsylvania Association Favors Price Increase

Agreeing that a price raise of from 75 cents to $1.00 per barrel is necessary to speed up and increase oil recovery, officials of the Pennsylvania Grade Crude Oil Association meeting in Pennsylvania last week, urged such a price increase immediately.

"OPA is creating an oil bottleneck that threatens the entire war effort," charged Representative Leon H. Gavin, Oil City, Pennsylvania, as he spoke to the group. "It is a critical situation," he declared, "and it will be a terrible catastrophe if within a few months from now, by reason of the short-sighted policy of OPA, we find ourselves without sufficient oil to fully man the machines of war."

Assistant Deputy Petroleum Administrator Robert E. Allen also warned of an oil shortage. He stated that the United States faces a permanent dearth of petroleum unless exploratory work is increased. "The industry must find new fields, drill new wells and finance new operations. To accomplish this, an adequate price must be established as a national structure."

The oil industry, like all others, is most responsive to the profit motive, Colonel E. O. Thompson, chairman of the Texas Railroad Commission, asserted before the meeting. "Subsidies will not get the oil," he said. "From my experience I would say they will drill for the subsidy and not for the oil." Discovery of a major field every week is necessary to meet the present demand for oil and its products, and to maintain proper reserves, Colonel Thompson declared.

Other speakers were Governor Andrew F. Schoeppel, of Kansas; Rudolph R Cubicciotti of L. Sonneborn Sons, New York; Samuel F. Pratt, general secretary of the association; and Fayette B. Dow, vice president and general counsel.

New officers chosen for the coming year were: D. T. Andrus, Bradford, president; Arthur T. Simmons, Bradford, first vice president; D. T. Ring, Columbus, Ohio, second vice president; Samuel Messer, Oil City, treasurer, and Walter R. Reitz, Oil City, assistant treasurer.

Oil Compact Commission Urges Crude Price Increase

War and post-war problems of the petroleum industry and measures to remedy gasoline and fuel-oil scarcities were principal topics discussed before a meeting last week of the Interstate Oil Compact Commission in Pittsburgh.

Governor Andrew F. Schoeppel, of Kansas, urged the necessity of a crude-price increase to stimulate discovery of new reserves. He reiterated that oil production is exceeding discoveries at a disturbing rate. "If the excuse is given that a reasonable increase in price for crude oil will cause inflation, then those responsible for the economic condition of our country have been treading on some pretty thin ice. The government has displayed a willingness to pay increased prices for other war needs. Why not for oil?"

Feeling that "there would be no question of a shortage of oil with which to bring the war to an early successful termination and with a minimum loss of life and property of the United Nations," Dr. John D. Gill of The Atlantic Refining Company, expressed no fear of a wartime shortage of oil. "Currently, the American oil industry can produce conservatively, 4,600,000 barrels of oil a day," he said. "If it were forced to abandon the practice of conservation," he continued, "as it might have been forced to do if our enemies had been more successful in their attempts to capture the oil resources of other countries, it could produce as much as 9 million barrels of oil a day. We could veritably deluge our enemies with petroleum."

Other speakers at the meeting included Dr. Robert E. Wilson, of New York; B. H. Weil, of Gulf Research and Development Company; Deputy Petroleum War Administrator Robert E. Allen; and Dr. Alexander Sachs, of New York.

East Texas Water Order Attacked in Court

Konawa Operating Company has enjoined the new order of the Texas Railroad Commission providing for a 5 to 1 water-oil ratio in the East Texas field. The injunction was issued by Judge J. D. Moore in 98th District Court last week.

This is the same company which enjoined the original order and the new injunction applies against both orders. In his ruling Judge Moore said that the order attempts to, and does restrict, if enforced, the production from marginal oil wells which is prohibited by the marginal-well law.

Meanwhile the commission planned an appeal which will supersede the court order and leave the commission's order in effect until final judgment is handed down by the Supreme Court of Texas.

Sohio Buys Producing Properties in Kansas

Sohio Producing Company has purchased interest in 175 Kansas wells from Nate Appleman, Wichita, at a price estimated to range from $2,000,000 to $2,500,000. The wells are located in Barton, Ellis, Ellsworth, Graham, McPherson, Rice and Russell counties, and according to Appleman Sohio will assume control of approximately 4600 barrels daily of gross allowable production. Net interest is approxiamtely 2400 barrels allowable daily.

Appleman will retain control of nine other properties in Western Kansas, also production in Eastern Kansas and Northern Oklahoma. He intends to continue drilling activities.

Texas Commission Approves Estes Field Water Flood

Permission has been granted to operators in the Estes field, Ward County, to conduct water flooding operations. At a recent hearing before the Texas Railroad Commission detailed information was presented showing the effect of an experimental water-flooding program which has been conducted by Humble Oil & Refining Company during the past week.

Crude Oil Coming from Storage as Runs To Stills Approach Peak for All Time

The current need for large quantities of petroleum was attested in the latest weekly statistics of the industry, covering the 7 days ended June 27; and the figures gave evidence of continued difficulty in meeting the heavy requirements of crude as well as finished products.

The highlight of the week's statistics was the stepping up of refinery runs to a new peak for the year, as the industry charged to stills only 105,000 barrels a day less of crude than the all-time record quantity processed in the week ended October 18, 1941, two months before the United States went to war. In running to stills 4,015,000 barrels of crude daily, refiners used 110,000 barrels per day more crude than in the previous week and 418,000 barrels per day or 11.6 percent more than the 3,597,000 barrels daily processed in the week ended June 27 last year. The plants were consuming during the week 60,000 barrels a day more than the wells were turning out, and the extra requirements over current production probably necessitated another substantial withdrawal of crude from storage, following the draft of over a million barrels in the previous week. As compared with the refinery runs of 4,015,000 barrels daily, crude oil production in the week ended June 26 averaged only 3,955,000 barrels per day, or about the same as the week before.

In spite of the high crude runs to stills, gasoline production was down a little from the previous week and some of that product was taken from storage, although production of both light and heavy fuel oils was well maintained, and it was possible to add around one half million barrels of each of the latter products to storage that needed to be built up.

The crude runs to stills at 4,015,000 barrels daily represented utilization of 83 per cent of the nation's present refining capacity of 4,825,000 barrels per day. Plants of the East Coast and Southwestern districts, included together in the statistics now, operated at 78 per cent of capacity in processing 1,899,000 barrels of crude daily.

Crude oil production of 3,955,000 barrels daily in the week of June 26 was 236,000 barrels or 6.3 per cent above the output of 3,719,000 daily in the corresponding week last year.

Gasoline production in the week amounted to 11,092,000 barrels, or 60,000 less than in the previous week although 507,000 barrels or 5 per cent more than the 10,585,000 barrels produced in the week ended June 27 last

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED June 26	July 3
Arkansas	75,500	75,200
California	787,100	768,200
Long Beach	31,450	31,050
Midway-Sunset	57,150	55,000
Kettleman Hills	42,000	41,400
Wilmington	94,950	93,150
Rest of State	561,550	547,600
Colorado	7,100	7,000
Illinois	206,300	221,200
Salem	30,200	29,200
Louden	36,500	39,500
Other New Pools	128,600	141,500
Old Pools	11,000	11,000
Indiana	14,900	14,600
Kansas	306,950	280,150
Kentucky	21,500	20,200
Louisiana	326,950	335,700
North	85,750	85,100
South	241,200	250,600
Michigan	55,800	54,500
Mississippi	53,300	55,200
Missouri	95	95
Montana	21,700	23,150
Nebraska	2,100	2,050
New Mexico	97,200	97,150
New York	14,600	14,550
Ohio	9,000	9,100
Oklahoma	339,400	335,500
Oklahoma City	60,100	59,800
Seminole Area	75,600	76,600
Rest of State	203,700	199,100
Pennsylvania	50,300	50,400
Tennessee	30	30
Texas	1,499,050	1,550,200
Upper Gulf Coast	380,400	394,700
East Texas Field	335,200	350,500
Rest of Eastern Texas	123,500	125,600
Lower Gulf Coast	134,600	140,200
Southwest Texas	56,600	61,300
South Central Texas	16,650	16,800
West Texas	229,500	236,000
North Texas	132,200	134,700
Panhandle	90,400	90,400
Utah	10	10
West Virginia	9,100	8,900
Wyoming	93,900	92,500
Total United States	3,991,885	4,015,585

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gas Oil & Distillate Stocks Barrels	Gas Oil & Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,020	5- 8	4,015	6-26	245,752	5-29	94,159	3-20	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4—8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	79,589	6-27	30,732	4- 3	66,991	5- 1

TRENDS OF 1942 AND 1943

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gas Oil & Distillate Production Weekly	Gas Oil & Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1942:									
January 3	4,038	3,961	244,440	13,797	92,987	3,855	49,357	6,918	95,857
January 31	3,871	3,848	250,740	13,292	97,810	3,817	40,674	6,640	91,189
February 28	4,016	3,675	259,373	12,131	105,635	3,799	34,547	6,813	88,285
March 28	3,820	3,667	263,208	11,663	105,624	3,661	31,756	6,344	83,045
April 25	3,581	3,506	257,073	10,535	102,897	3,267	29,240	6,869	81,107
May 30	3,877	3,522	255,023	10,478	95,355	3,034	31,384	6,993	79,628
June 27	3,719	3,581	253,364	10,713	88,396	3,549	32,851	6,615	77,304
July 25	3,691	3,658	249,262	10,864	82,281	.....	35,966	.....	77,816
August 29	3,964	3,697	249,007	11,300	80,831	.....	42,060	.....	78,034
September 26	3,909	3,802	242,785	10,954	80,550	.....	45,945	.....	78,943
October 31	3,901	3,731	239,266	11,153	79,159	.....	48,131	.....	79,166
November 28	3,878	3,736	234,850	11,269	78,854	.....	49,739	.....	77,796
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	4,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 5	3,933	3,662	245,107	10,632	82,205	3,063	32,577	7,505	67,461
June 12	3,988	3,799	244,720	10,626	81,114	3,520	32,555	7,674	67,652
June 19	3,966	3,905	243,516	11,152	79,806	3,734	33,558	8,198	67,455
June 26, 1943	**3,955**	**4,015**	.....	**11,092**	**79,589**	**3,876**	**34,044**	**8,126**	**67,960**
June 27, 1942	3,719	3,597	[4]252,748	10,585	88,461	3,549	32,206	6,615	77,790
Change:									
In week	—11	+110	—1,204	—60	—217	+142	+486	—72	+505
In year	+236	+418	—9,232	+507	—8,872	+327	+1,838	+1,511	—9,830
In year	+6.3%	+11.6%	—3.6%	+4.9%	—10.0%	+9.2%	+5.7%	+22.8%	—12.6%

[1] All time peack. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent States. [4] Stocks, June 20, 1942.

year. Output of this product possibly was too large, as demand is lower than last year, and the withdrawal of 217,000 barrels from storage during the week was less than normal for the season. The national inventory of gasoline totaled 79,589,000 barrels on June 26 and was 8,872,000 barrels or 10 per cent less than the 88,461,000 barrels on hand June 27 last year.

Production of gas oil and distillate fuel is being maintained well above last year's trend. The output of 3,876,000 barrels in the week of June 26 was 142,000 barrels larger than that in the previous week and 327,000 barrels or 9 per cent above the 3,549,000 barrels produced in the June 27 week last year. Stocks were increased 486,000 barrels during the week to 34,044,000 barrels, and that quantity was 1,838,000 barrels or 5.7 per cent more than the 32,206,000 on hand June 27, 1942.

Production of residual fuel oil was 72,000 barrels less in the week of June 26 than in the previous week, having totaled 8,126,000 barrels. However, that output was 1,511,000 barrels or 23 per cent in excess of the 6,615,000 barrels of production in the corresponding week last year. Stocks of this product were augmented by 505,000 barrels during the week, having been increased to 67,960,000 barrels. That amount was, however, almost 10,000,000 barrels or 12.6 per cent less than the 77,790,000 barrels reported as of June 27 last year.

Crude oil stocks in the United States declined from 244,720,000 barrels on June 12 to 243,516,000 barrels on June 19, the Bureau of Mines reported. This was a decrease of 1,204,000 barrels, which followed a withdrawal of 387,000 barrels in the preceding week, and as previously indicated, a further draft from storage probably occurred in the week of June 26, in consequence of the stepping up of runs to stills. The June 26 inventory was 9,232,000 barrels or 3.6 per cent less than that of 252,748,000 barrels on hand one year previously.

Shortages Make Oil Markets Strong in All Districts

In all sections of the country the oil industry markets continue very strong, as difficulty in supplying demand arises from scarcity of materials and inadequacy of transportation.

Throughout the East Coast district supplies are extremely scarce, in reflection of the heavy takings by the military and the continuing great demand for industry and essential civilian activity. Stocks are seriously low, and there is no prospect of expanding them, because of the limited quantities coming in for civilian consumption. Quotations remain generally unchanged.

In the Western Pennsylvania refining district, increasing strength of neutral oils is the outstanding development, and prices have been advanced by some refiners that previously were quoting under the prevailing levels. All other lubricants, strong even heretofore, are in brisk demand, as purchasers foresee serious shortage ahead, due to lack of enough Pennsylvania grade crude. While the neutrals were comparatively weak for several months in the past, there is now much trading in them among refiner. Gasoline, fuel oils, and other products similarly are in strong demand in the Appalachian district.

All grades of gasoline are strong in the Middle West, with refiners as well as marketers actively seeking supplies. Third grade gasoline is extremely scarce, in reflection of heavy agricultural consumption, and this shortage has stimulated the demand for alternative products, including house brand gasoline, tractor fuel, and kerosene, which consequently have also become increasingly scarce. Although the use of fuel oil has been persistently discouraged, with the result that demand has been somewhat reduced, the consumption still is above last year's trend, and only nominal building up of stocks has been possible. With refiners and marketers hard pressed to supply requirements for current consumption, they have had very little of the fuel oils to furnish to dealers for customary summer filling of storage, and it is evident that extreme scarcity is in store for next winter.

In the upper Mid-Continent, as in the Middle West, a principal problem of refiners is that of meeting requirements of third grade gasoline, because of the heavy agricultural consumption. Most refiners encountered the farm season demand with sub-normal inventories but on the other hand have found demand greater than normal. The refiners of the district are extremely low also on stocks of most other products, and they are generally having difficulty in taking care of their regular customers, being obliged to allocate the limited supplies among them. Even if larger supplies were available to distribute, however, there could not be much if any stepping up of deliveries, because of the lack of adequate transportation.

On the Gulf Coast there is now more difficulty in obtaining supplies than in securing transportation, practically all products being tight and in heavy demand that can be only partially met. Gasoline and kerosene are particularly scarce, and some grades of gasoline have improved in price. There has been also some stiffening of prices of gas oils.

PIPE LINE REVIEW

Big-Inch Extension to Operate by July 15

First oil will begin moving through the big-inch pipe line to the East Coast by July 15, but probably two months will be required to get the pumps necessary to operate the line at capacity," PAW Ickes reported to a press conference July 1.

While the initial movement will be low, he said, it will serve to relieve the tank-car situation. Most of the cars made available, Ralph K. Davies interpolated, will go into service between the Middle West and East.

Corpus Christi District Oil Going into Big-Inch

Crude oil from the Corpus Christi district will be included with the mixed grades of Texas and New Mexico oils handled by the War Emergency Pipe Line's Longview-Norris City 24-inch line early this week. About 40,000 barrels daily average began moving the past week from Corpus Christi by tankers to Houston, where the oil will enter the lines of Shell Pipe Line Corporation and Pan American Pipe Line Company on consignment to the Longview terminal. These relay lines will handle 28,000 barrels and 12,000 barrels daily, respectively. Additional tankers are due to enter the Corpus Christi-Houston service in order to stepup the movement to 70,000 barrels daily until the Southwest Emergency Pipe Line completes the rebuilding of its combination 14- and 16-inch line between the two points late this summer.

Suit Stops Building of Short Michigan Line

Charging breach of agreements, Roosevelt Oil Company and Simrall Corporation have brought suit against Standard Oil Company of Ohio and Sohio Pipe Line Company to prevent the later from entering Central Michigan as a crude oil purchaser. The court granted a temporary injunction which halted proposed construction by Sohio of a 6-mile pipe line into the Rose Lake area, Osceola County.

Simrall started operations in Michigan in 1932 and in 1936 sold 50 per cent interest in the company to Standard. At the same time, the plaintiff alleges, certain protective contracts and agreements were entered into to guarantee Roosevelt Oil Company certain minimum amounts of crude purchased by Simrall with first call on excess assigned to Sohio. Since that time Sohio has operated as a transporter of crude, chiefly to Toledo, with Simrall operating as field purchaser and gatherer.

Plaintiffs charge that if Sohio is permitted to enter the Rose Lake area (no oil has been produced in this district but three wells are drilling in year's hottest structure play) it will be in direct competition to Simrall and therefore contrary to existing contracts. It marks the first move of Standard to act as a field buyer in Central Michigan.

Roosevelt further alleged in its bill of complaint that the pipe line proposal represents a direct move by Standard to circumvent contracts setting forth the amount of oil to be made available to the two companies. C. L. Maguire, president of both Roosevelt and Simrall, said the two companies had been in disagreement with Standard since early spring as to the division of crude purchased in Michigan "with Standard seeking far more than provided for in our contracts."

Michigan Gas Line

H. L. Gentry Engineering Company has been awarded contract by West Michigan Consumers Company of Muskegon to build 60 miles of 8-inch gas line between Muskegon and the Reed City oil field. The line is scheduled to be completed by September 1.

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Current Range (Cents a gal.)		Changes from Month Ago	
Oklahoma Refineries:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5⅛	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	6⅞	...	...
Mid-Western Tank Car:				
60 Octane and Under	5⅛	5¼	...	...
63-66 Octane	5⅛	5⅝	...	...
72-74 Octane	5⅞	6	...	...
78 Octane, Ethyl	6¾	7⅛	...	...
New York Harbor:				
68-70 Octane	9¼	9¼	...	...
72-74 Octane	9¼	9⅜	...	...
Gulf Coast, Cargoes:				
60 Octane unleaded	5	5	...	...
65 Octane unleaded	5¼	5¼	...	...
68 Octane unleaded	5⅛	5⅜	...	...
70 Octane unleaded	5⅜	5⅜	...	...
63-65 Octane leaded	5⅜	5⅜	...	...
72-74 Octane leaded	5⅜	5⅜	...	...
Min. 80 Octane leaded	6	6⅜	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3⅛	3⅛	...	...
F.O.B. Br'kenr'ge, Tex.	3½	3½	...	...
KEROSINE				
Oklahoma Refineries:				
41-43 water white	4⅜	4½	...	...
42-44 water white	4½	4⅝	...	...
Mid-Western Tank Car:				
41-43 water white	4⅜	4⅜	...	...
42-44 water white	4½	4⅝	...	...
New York Harbor	7⅛	7⅛	...	...
Gulf Coast:				
41-43 water white	4⅛	4⅛	...	...
42-44 water white	4⅛	4⅛	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅛	...	...
In Mid-Western Market Group 3, basis	4	4⅛	...	+⅛
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 prime white	3⅞	3⅞	...	...
No. 1 straw	3⅞	4	...	...
No. 2 straw	3⅞	3⅞	...	...
No. 3	3½	3½	...	...
Mid-Western Tank Car:				
No. 1 prime white	3⅞	3⅞	...	...
No. 2 straw	3⅞	3⅞	...	...
No. 3	3½	3½	...	...
New York Harbor:				
No. 1	7⅛	7⅛	...	...
No. 2	6¾	6¾	...	...
No. 3	6¾	6¾	...	...
Gulf Coast, Cargoes:				
No. 2	3¾	3¾	...	...
DIESEL & GAS OILS (Cents per gallon, cargoes, according to Diesel index number)				
Gulf Coast:				
Below 43 diesel index	3¾	3¾	...	...
43-47 diesel index	3⅞	4	...	...
48-52 diesel index	4	4	+⅛	...
53-57 diesel index	4⅛	4⅛	+⅛	...
58 and above	4¼	4¼	...	...

HEAVY FUELS	Current Range (Per Bbl.)		Changes from Month Ago	
Oklahoma Refineries:				
No. 6	...	...	...	...
14-16 Gravity	$0.97	$0.97	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.80	.80	...	...
New York Harbor:				
No. 5	1.95	2.01	...	...
No. 6	1.65	2.07	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$0.85	$1.27	...	...
New York Harbor	1.65	2.07	...	...
DIESEL OIL, HEAVY (Per barrel, ships' bunkers)				
Gulf Coast, below 28 grav.	$1.35	$1.35	...	...
Gulf Coast 28 grav.	1.65	1.65	...	...
New York Harbor	2.78	2.78	...	...
LUBRICATING OIL (Cents a gallon)				
Oklahoma Refineries:				
Bright stock (viscosity at 210°):				
200 vis. D, 10-25 pour point	27	27	...	...
150-160 vis. D:				
0-10 pour point	23	23	...	...
10-25 pour point	22½	23	...	...
25-40 pour point	23	23	...	...
150-160 vis. E	22	22	...	...
120 vis. D, 0-10 pour point	22	22	...	...
Cylinder Stocks:				
600 s.r. dark green	8½	8½	...	...
600 s.r. olive green	10	11	...	...
631 s.r.	18½	18½	...	...
Neutral Oils (viscosity at 100°, 0-10 pour point):				
Pale Oils:				
60- 85 vis. No. 2 color	8	8	...	...
86-110 vis. No. 2 color	8½	8½	...	...
150 vis. No. 3 color	14½	14½	...	...
180 vis. No. 3 color	15	15	...	...
200 vis. No. 3 color	15	15	...	...
250 vis. No. 3 color	16	16½	...	...
280 vis. No. 3 color	17	17	...	...
300 vis. No. 3 color	18	18	...	...
Red Oils:				
180 vis. No. 5 color	15	15	...	...
200 vis. No. 5 color	15	15	...	...
280 vis. No. 5 color	...	...	...	...
300 vis. No. 5 color	17½	17½	...	...

LUBRICATING OIL (Cents a gal.)			Changes from Month Ago	
Western Pennsylvania: Cylinder Stocks:				
600 s.r. filtrable	15	15	...	...
650 s.r.	15½	15½	...	...
600 flash	16	16	...	...
630 flash	17	17	...	...
Bright Stock (No. 8 Color, 145-155 vis. at 210°, 540-550 fl.):				
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	25	25	...	...
Viscous Neutrals (No. 3 Color, vis. at 70°):				
200 vis. (180 at 100), 420-425 fl.:				
Zero pour test	31½	31½	...	...
10 pour test	30½	30½	...	...
15 pour test	29½	29½	...	...
25 pour test	24	28	+1	+2
150 vis. (143 at 100), 400-405 fl.:				
Zero pour test	29½	29½	...	...
10 pour test	28½	28½	...	...
15 pour test	27½	27½	...	...
25 pour test	22	26	+1	+2

EASTERN STATES CRUDE OIL PRICES

FIELD—	Flat Price	Date Posted
Bradford-Allegany	$3.00	3-26-42
Sw. Pa. Pipe Line	2.65	3-26-42
Eureka Pipe Line, W. Va.	2.59	3-26-42
Corning Grade, Ohio	1.31	5-27-41
Buckeye Crude, Ohio	2.30	6-18-41

MAJOR CRUDE OIL PRICE CHANGES

	Penna. Grade	Mid-Cont. (36 Gr.)	Calif. (26 Gr.)
May 22, 1940	Cut 25	.....	.....
June 18, 1940	Cut 25	.....	.....
July 12, 1940	Cut 25	.....	.....
Aug. 28, 1940	Cut 15	.....	.....
Nov. 12, 1940	Up 15	.....	.....
Dec. 17, 1940	Up 15	.....	.....
Jan. 27, 1941	Up 15	.....	.....
April 1, 1941	.....	Up 5	.....
April 23, 1941	Up 10	.....	.....
May 19, 1941	.....	Up 10	.....
May 21, 1941	Up 15	.....	.....
June 18, 1941	Up 20	.....	.....
Aug. 14, 1941	Up 23	.....	.....
Aug. 25, 1941	Cut 23	.....	.....
March 26, 1942	Up 25	.....	.....
April 1, 1943	.....	.....	Up ‡25

‡ 14 and 15 gravity.

CRUDE OIL PRICES IN CALIFORNIA

Prices per barrel in field, posted by Standard Oil Company of California, effective April 1, 1943.
All gravities above those quoted take highest price offered in that field.

GRAVITY	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Olinda, Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier, East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Newhall, Kern River, Kern Front, McKittrick Round Mountain	Greeley, Canal, Wasco	Coles Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
12-12.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....	$0.94	$0.94	$0.94	....	....	....
13-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....	.96	.96	.96	....	....	....
14-14.9	....	$0.93	....	....	$0.96	....	$0.95	....	$0.95	$0.95	$0.95	$0.97	....	....	.98	....	....	....	.98	.98	.98	....	....	....
15-15.9	....	.96	....	....	1.00	$1.01	.97	....	.97	.96	.97	.97	....	....	*Playa del	....	....	....	.98	.98	.98	....	....	....
16-16.9	....	.96	$1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	Rey	....	....	....	.98	.98	.98	....	....	....
17-17.9	....	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	....	.98	.98	.98	....	....	....
18-18.9	$0.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	$0.98	.98	.98	.98	....	....	....
19-19.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	....	....	....
20-20.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	....	....	....
21-21.9	.93	.96	1.01	....	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	....	....	....
22-22.9	.96	.98	1.02	$0.88	1.00	1.01	.97	....	.97	.96	.97	.97	....	....	.88	....	....	.98	.98	.98	.98	$0.95	....	....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	.98	....	.97	.98	1.00	.97	....	....	.91	....	....	.98	.99	.98	.98	.95	....	....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	1.01	....	1.01	1.02	1.03	.97	$0.99	....	.95	....	....	.98	1.03	.99	.98	.95	....	....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	1.04	....	1.05	1.06	1.07	.98	1.02	....	.99	....	....	.98	1.07	1.01	.98	....	....	....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	1.08	....	1.09	1.10	1.11	1.01	1.06	....	1.03	....	....	.98	1.11	1.04	.98	....	....	....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	....	1.01	1.15	1.07	.98	....	....	....
28-28.9	1.18	1.18	1.17	1.15	1.17	1.17	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	....	1.04	1.19	1.10	1.00	....	....	....
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	....	1.07	1.24	1.13	1.02	....	....	....
30-30.9	1.23	1.24	....	....	1.23	1.22	....	1.21	....	....	....	1.15	1.21	1.15	....	$1.01	$1.09	1.10	1.28	1.16	1.04	....	....	FOB
31-31.9	....	....	....	....	....	1.24	....	1.25	....	....	....	1.19	1.24	1.19	....	1.04	1.12	1.14	....	....	1.06	....	....	Ship
32-32.9	....	....	....	....	....	....	....	1.29	....	....	....	1.23	1.28	1.23	....	1.07	1.14	1.17	....	....	1.09	....	....	....
33-33.9	....	....	....	....	....	....	....	1.32	....	....	....	1.27	....	1.26	....	1.10	1.17	....	....	....	1.11	....	....	$1.22
34-34.9	....	....	....	....	....	....	....	1.36	....	....	....	1.31	....	1.30	....	1.13	1.20	....	....	....	1.13	....	....	1.25
35-35.9	....	....	....	....	....	....	....	....	....	....	....	1.33	....	....	....	1.16	1.22	....	....	....	....	....	$1.23	1.28
36-36.9	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	....	1.19	1.25	....	....	....	....	....	1.26	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	1.22	....	....	....	....	....	....	1.29	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	....	1.25	....	....	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....	....

* Effective April 1, 1943, posted by Union Oil Company of California.

Gravity-Scale Crude Oil Prices in Mid-Continent Fields

Posted in most instances between May 19 and May 21, 1941

GRAVITY	Oklahoma-Kansas		North Louisiana-Arkansas Mississippi					Inland Texas and New Mexico				South Texas		Texas Gulf Coast			Louisiana Gulf Coast						
	Stanolind, Gulf, Texas, Skelly, Barnsdall, Tidewater, Sinclair, Phillips	Carter, Magnolia, Shell	[1]Rodessa, etc.	[2]Champagnolle, etc. Tinsley, Miss.	Bunkie, Eola, Olla, S. Olla, Little Crk. (by Standard)	Lisbon, La (by Gulf)	[3]Atlanta, Buckner, etc., Ark.	North and West Central Texas	[4]Eastern Texas	Panhandle	West Texas, New Mexico	[5]Refugio Type	[6]Mirando Type	[7]Gulf Coast	[8]Anahuac Type	[9]Dickinson Type	[10]Gulf Coast	[11]Standard of La.	[12]Texas Co.	[13]Texas Co.	[14]Magnolia Pet. Co.	[15]Shell Oil Co.	Jennings (by Gulf)	[16]Rocky Mt. Area (Salt Creek, etc.)
17-17.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.94	....	....	....
18-18.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
19-19.9	....	....	....	....	....	....	....	....	$0.80	$0.80	$0.70	$1.08	$1.03	$1.06	$0.98	$0.93	$1.06	....	....	....	.98	$0.99	....	....
20-20.9	$0.85	$0.75	....	....	....	....	$0.68	$0.85	.82	.82	.72	1.10	1.05	1.08	1.00	.95	1.08	$0.90	....	....	1.00	1.01	....	....
21-21.9	.87	.78	....	....	....	....	.70	.87	.84	.84	.74	1.12	1.07	1.10	1.02	.97	1.10	.92	....	....	1.02	1.03	....	....
22-22.9	.89	.81	....	....	....	....	.72	.89	.86	.86	.76	1.14	1.09	1.12	1.04	.99	1.12	.94	....	....	1.05	1.05	....	....
23-23.9	.91	.84	....	....	....	....	.74	.91	.88	.88	.78	1.16	1.11	1.14	1.06	1.01	1.14	.96	....	....	1.08	1.07	....	....
24-24.9	.93	.87	$0.88	$0.86	$1.03	....	.76	.93	.90	.90	.80	1.18	1.13	1.16	1.08	1.03	1.16	.98	....	....	1.11	1.09	....	....
25-25.9	.95	.90	.90	.88	1.05	....	.78	.95	{.92 / .97}	.92	.82	1.20	1.15	1.18	1.10	1.05	1.18	1.00	....	....	1.14	1.11	....	....
26-26.9	.97	.93	.92	.90	1.07	....	.80	.97	.99	.94	.84	1.22	1.17	1.20	1.12	1.07	1.20	1.02	....	....	1.17	1.13	....	....
27-27.9	.99	.96	.94	.92	1.09	$0.81	.82	.99	1.01	.96	.86	1.24	1.19	1.22	1.14	1.09	1.22	1.04	....	....	1.19	1.15	....	....
28-28.9	1.01	.99	.96	.94	1.11	.83	.84	1.01	1.03	.98	.88	1.26	1.21	1.24	1.16	1.11	1.24	1.06	$1.06	....	1.21	1.17	....	$0.96
29-29.9	1.03	1.02	.98	.96	1.13	.85	.86	1.03	1.05	1.00	.90	1.28	1.23	1.26	1.18	1.13	1.26	1.08	1.08	....	1.23	1.19	....	.98
30-30.9	1.05	1.05	1.00	.98	1.15	.87	.88	1.05	1.07	1.02	.92	1.30	1.25	1.28	1.20	1.15	1.28	1.10	1.10	$1.05	1.25	1.21	....	1.00
31-31.9	1.07	1.07	1.02	1.00	1.17	.89	.90	1.07	1.09	1.04	.94	1.32	1.27	1.30	1.22	1.17	1.30	1.12	1.12	1.07	1.27	1.23	$1.07	1.02
32-32.9	1.09	1.09	1.04	1.02	1.19	.91	.92	1.09	1.11	1.06	.96	1.34	1.29	1.32	1.24	1.19	1.32	1.14	1.14	1.09	1.29	1.25	1.09	1.04
33-33.9	1.11	1.11	1.06	1.04	1.21	.93	.94	1.11	1.13	1.08	.98	1.36	1.31	1.34	1.26	1.21	1.34	1.16	1.16	1.11	1.31	1.27	1.11	1.06
34-34.9	1.13	1.13	1.08	1.06	1.23	.95	.96	1.13	1.15	1.10	1.00	1.38	1.33	1.36	1.28	1.23	1.36	1.18	1.18	1.13	1.33	1.29	1.13	1.08
35-35.9	1.15	1.15	1.10	1.08	1.25	.97	.98	1.15	1.17	1.12	1.02	1.40	1.35	1.38	1.30	1.25	1.38	1.20	1.20	1.15	....	....	1.15	1.10
36-36.9	1.17	1.17	1.12	1.10	1.27	....	1.00	1.17	1.19	1.14	1.04	1.42	1.37	1.40	1.32	1.27	1.40	1.22	1.22	1.17	....	....	1.17	1.12
37-37.9	1.19	1.19	1.14	1.12	1.29	....	1.02	1.19	1.21	1.16	1.06	1.44	1.39	1.42	1.34	1.29	1.42	1.24	....	1.19	....	....	1.19	1.14
38-38.9	1.21	1.21	1.16	1.14	1.31	....	1.04	1.21	1.23	1.18	1.08	1.46	1.41	1.44	1.36	1.31	1.44	1.26	....	1.21	....	....	1.21	1.16
39-39.9	1.23	1.23	1.18	1.16	1.33	....	1.06	1.23	1.25	1.20	1.10	1.48	1.43	1.46	1.38	1.33	1.46	1.28	....	1.23	....	....	1.23	1.18
40 & Up	1.25	1.25	1.20	1.18	1.35	....	1.08	1.25	1.27	1.22	1.12	1.50	1.45	1.48	1.40	1.35	1.48	1.30	....	1.25	....	....	1.25	1.20

[1] Gulf schedule for Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, El Dorado and Rodessa, Texas. Standard of La. schedule for Cotton Valley, Rodessa, Shreveport (Cross Lake), and Caddo. Magnolia schedule for Haynesville, Cotton Valley, Rodessa, and Miller Co., Ark. Texas Co. schedule for "North Louisiana."

[2] Schedule of Standard of La. for Catahoula Lake, Elm Ridge, Hemphill, De Soto, Sabine, Fouke, Homer, Miller Co., Sugar Creek. Schedule of Root Petroleum Co. for Nick Springs, Urbana light, Schuler sweet, Rainbow, South Field (El Dorado), and Champagnolle.

[3] Schedule of Standard of La. for Atlanta, Buckner, Magnolia, Patton, Schuler: Jones sand, Village. Schedule of Root Petroleum Co. for Schuler: Reynolds lime, and Schuler: Jones sand.

[4] Humble schedule for Anderson, Cherokee, Limestone, and Navarro counties and Navarro Crossing field, except that prices from 80 to 92 cents represent postings only for Hawkins field, Wood County. For Talco crude, Magnolia's prices are same as Humble's for Hawkins. Rodessa, Texas, prices are same as in Rodessa, La.-Ark.

[5] Schedule for Refugio, E. White Point, Greta, Melon Creek, Midway, Minnie Bock, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

[6] Schedule for Blanchard, Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (N. and S.), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

[7] Humble schedule for Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa, Mykawa new, Raccoon Bend, South Thompsons, Sugarland, Thompsons, Webster. Texas Co. schedule for Ariola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, Withers; except that schedule provides $1.36 top, 34 gravity. Pan American Prod. Co. schedule for Hastings and South Houston. Gulf schedule for Spindle Top, Sour Lake, Lovells Lake, West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompsons, Lochridge, Dyersdale, and Hull (old) crudes. Sun schedule for Barbers Hill, Batson old, Cotton Lake, Esperson below 35 gravity, Goose Creek, Greens Lake, Hull below 25, Humble below 35, Nome, North Dayton below 25, Orange, Saratoga, Sour Lake, South Liberty.

[8] Humble schedule for Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull old and new, Pierce Junction, Red Fish Reef, Turtle Bay fields. Sun schedule for Anahuac, Caplen, and Turtle Bay. Gulf schedule for Anahuac. Hull new, Pierce Junction, Orange and Thompsons deep.

[9] Humble schedule for Dickinson, Gillock, Hardin, League City, and Rowan fields. Pan American Prod. Co. schedule for Gillock crude.

[10] Sun Oil Co. schedule for Bayou Blue, Chacahoula, Fausse Points, Hackberry (E. and W.), and Vinton. Texas Co. schedule for Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville and Port Barre for crude ranging in gravity up to 27-27.9; for lighter oils in those fields see Footnote 12. Gulf schedule for Edgerly, Starks, Vinton, E. Hackberry, Cameron Meadows, Leesville. Deduct 10 cents for Gulf's prices for Timballer Bay, Grand Bay, Quarantine Bay, and West Bay. Deduct 2 cents for Standard of La. prices for University (Baton Rouge) crude of 30 to 35.9 gravity.

[11] Standard of La. schedule for Bayou Mallet, Bayou Sale, Choctaw, Darrow, Jeanerette, Lirette, N. Crowley, S. Crowley, Port Barre, Potash, Roanoke, St. Martinville. Deduct 10 cents for Anse La Butte.

[12] Texas Co. schedule for Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou, Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club. Add 8 cents to these prices for Texas Co. postings for 28 or higher gravity at Bay St. Elaine, Caillou Island, Iberia, Lake Pelto, Leesville, Port Barre, and Lake Barre.

[13] Texas Co. schedule for Delta Farms, Golden Meadows, Lake Salvador. Also Standard of La. for Golden Meadows.

[14] Magnolia schedule for Lockport, Cameron Meadows, West Gueydan.

[15] Shell Oil Co. schedule at Iowa, Black Bayou, White Castle. For Shell's prices at Roanoke and Chalkley fields deduct 5 cents. For Shell's prices at Gibson, South Houma, Hester, and West Lake Verret fields deduct 10 cents.

[16] Sinclair-Wyoming Oil Co. prices at Salt Creek, Lost Soldier, Iron Creek, effective May 20, 1941. Deduct 10 cents for East Mahoney and deduct 20 cents for Mahoney and Werts.

MID-CONTINENT FLAT PRICES

FIELD—	Flat Price	Date Posted
Arkansas:		
Big Crk., Columbia, McKamie, Macedonia, Dorcheat, sour dist.	$1.25	2- 3-43
Dorcheat, Macedonia dist'l.	1.30	11-16-42
Smackover, Heavy	.83	5-22-41
Texarkana sweet distillate	1.40	-42
Louisiana, North:		
Cotton Valley Distillate	1.40	9- 1-41
Cotton Valley (Holloway sn.)	1.25	5-22-41
Lisbon Distillate	1.20	5-22-41
Urania	1.15	5-22-42
Louisiana, South:		
Erath	1.21	5-21-41
Garden Island	1.36	5-21-41
Happytown	1.15	5-20-41
Lafitte, Paradis	1.19	5-21-41
Lake Arthur & Tepetate	1.18	5-21-41
Lake Mongoulois	1.36	5-21-41
Ville Platte	1.30	5-22-43
Nebraska:		
Falls City, in field	.90	8- 1-41
Falls City, in tank cars	.95	8- 1-41
Shubert, in tank cars	.97	8- 1-41
Texas:		
Alice, Benavides (No. Sweden), Ben Bolt, Clark-Muil, Sun and Tom Graham	1.35	5-21-41
Cayuga	.90	5-21-41
Chapel Hill 50° and up	1.25	3-19-42
Chapel Hill below 50°	1.18	1-20-42
Clay Creek	1.00	5-22-41
Cleveland	1.26	5-21-41
Conroe	1.43	5-21-41
Esperson 35° & up; S. Esperson (Sun Oil)	1.30	5-22-41
East Texas, Flag Lake	1.25	5-20-41
Flour Bluff, East Flour Bluff, and La Rosa	1.33	5-21-41
Hockley-Cochran Counties	.87	5-21-41
Livingston, Cleveland	1.25	5-20-41
Long Lake	1.23	5-21-41
Luling	1.05	5-21-41
Lytton Springs	1.17	5-21-41
North Rincon	1.45	2- 3-43
Salt Flat, North Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.14	5-21-41
Satsuma, Tomball	1.40	5-21-41
Sun Oil Co. at Batson (new), Fig Ridge, Hardin, Hull 25 and up, Humble 35 and up, LaBelle, N. Dayton 25 and up, Oyster Bayou, Seabreeze, S. China, W. Orange and Willow Slough	1.25	5-22-41
South Cotton Lake	1.35	5-22-41
Sun, N. Sun, N. Rincon, Garcia	1.35	5-22-41
Van	1.08	5-21-41
Yates (Deep)	.95	5-20-41
Yates (Shallow)	.82	5-20-41
Yturria (Sun in S. Texas)	....	....

MICHIGAN PRICES

Central (Basin):		
Porter, Greendale, Crystal, Wise, Midland, Vernon, Saginaw	$1.44	5-27-41
Buckeye, Edenville, Bentley, Beaverton, Monitor, Kawkawlin	1.42	5-27-41
Freeman, Lincoln, Sherman Redding, Temple, Winterfield, Trenton-Monroe Co., Fork Tws.-Mecosta Co.	1.39	5-27-41
Hamilton-Grout	1.29	5-27-41
Adams	1.27	6- 1-41
Arenac, Clayton, Ogemaw, W. Branch	1.24	5-27-41
Southwest (Shallow):		
Traverse, crude in Allegan, Kent, Ottawa, Van Buren Counties	1.45	6- 2-41
Clare	1.11	5-27-41

MIDDLE WEST PRICES

FIELD—	Flat Price	Date Posted
Lima, Ohio-Ind.	$1.50†	10-28-42
Illinois Basin (Sohio Corp.)	1.37	5-19-41
Lake Centralia-Salem, Illinois	1.37	5-19-41
Eastern Ill.-Western Ind.	1.22	5-21-41
Plymouth, Illinois	1.05	4-28-43
Western Kentucky	1.32	5-21-41
Birk City, Western Kentucky	1.32	5-21-41
Kentucky River, Eastern Ky.	1.43	6-19-41
Big Sandy River, Eastern Ky.	1.38	6-19-41
Cleveland, Lodi, Chatham, Ohio	1.30	9- 1-41

ROCKY MOUNTAIN STATES PRICES

Colorado:		
Canon City and Florence	$1.05	5-21-41
Iles	1.07	5-20-41
Montana:		
Cat Creek	1.15	4- 1-41
Cut Bank (6 Buyers)*	1.05-1.20	3-30-42
Dry Creek	1.02	5-20-41
Sunburst	1.00	5-20-41
New Mexico:		
Artesia	.94	5-21-41
Hogback	1.00	10-11-38
Wyoming:		
Big Muddy	1.08	5-30-41
Byron	.70	3- 4-43
Elk Basin	1.00	5-21-41
Elk Basin, Black	.90	4-28-43
Frannie, Light	.85	2-26-43
Frannie, Heavy	.62	2-26-43
Garland	.60	3- 4-43
Grass Creek, Light	1.00	5- 1-41
Grass Creek, Heavy	.65	4- 1-43
Hamilton Dome	.60	2-26-43
Lance Creek (Ohio Oil Co.)	1.12	7- 1-41
Mill Creek	.72	10-11-38
Oregon Basin	.65	3- 4-43
Osage	1.30	10-11-38
Poison Spider	.65	2-26-43
Rock River	1.15	5-21-41
Salt Creek, Tensleep Heavy	0.8285	2-27-43

*About 25% of Cut Bank crude brings $1.20 per barrel; 65% less than $1.20 and minimum $1.10; and 10% less than $1.10.

†$1.50-price applies to about ¾ of field's production; $1.60 to ¼ of it.

Oil Supply Near Arctic Circle Made Available by Army

Less than 100 miles from the Arctic Circle in the Northwest territory of Canada troops of the Army of the United States have overcome the difficulties of wilderness and rough weather to tap a huge source of oil to supply the armed forces in Canada and Alaska, the War Department has announced.

This, the Canol Project, is going forward under an agreement with the Canadian government, which retains ownership of the wells developed.

Men and machines began the task about a year ago, after preliminary surveys had been made. They are still at it, and progress has been rapid despite manifold natural obstacles.

Source of the oil is at Norman Wells on the Mackenzie River near Fort Norman. A single well had been drilled there in 1920 by Imperial Oil Company of Canada to supply prospectors, trappers and others in that land where radium, copper, gold, silver and other minerals are found. The oil produced by that one well was refined on the site and was used locally for airplanes, tractors and other purposes.

Early in 1942, the possibilities of the region for military uses were realized. There were military installations in Canada and Alaska which could best be supplied from this area if the petroleum products could be obtained and transported to them. The Alcan Highway was soon to be constructed. It was seen that the two projects would be tied together by common aims. So a survey was made by personnel of the Corps of Engineers, Army Service Forces.

Wells had to be drilled, Refineries had to be established. A pipe line had to be built to get the oil to the Alcan Highway, the artery of supply. To accomplish these things vast quantities of materials had to be transported over terrain as wild as any on the continent. Roads did not exist. Winter temperatures drop to 70 degrees below zero, and in summer the thermometer reaches 90. Flies, mosquitoes and gnats attack in swarms. For the men, soldiers and civilians who were to work there, living conditions would be as hard as they could be on any construction job.

Ways and means were considered. Equipment could go from Edmonton, Alberta, to McMurray, in the same Province, by rail, but there the railroad ended. There were three ways to get it to Norman Wells, 1000 miles away. The most convenient and only fast way was by air. The second favorable route was by water. That went down the Athabaska River to Lake Athabaska, thence by the Slave River to Fitzgerald, where some 16 miles of rapids make river transportation impossible as far as Fort Smith, which is just across the boundary line between Alberta and Northwest Territory. Thence boats may go by the Slave River to Great Slave Lake and then down the Mackenzie to Norman Wells. The third, or land route, is generally good only in the winter when the ground is frozen. Tractor trailers may start at Peace River, Alberta, at the end of rail and proceed northward.

The officer in charge of the Canal Project explored the situation, discussed it with men who knew the country. He decided the solution was to use the water route in summer, the land route in winter, and airplane for a rapid communication.

Engineer troops started at McMurray in the late spring of 1942 with standard Engineer construction equipment. In collaboration with the civilian contractor, Bechtel-Price-Callahan, they built barges and rafts, some of them from local materials to carry as much material as possible to Norman Wells during the summer for winter construction. Some of those barges were standard Engineer pontoons lashed together and pushed by small boats and outboard motors. The portage from Fitzgerald to Fort Smith was a problem to be solved. The great barges, weighing as much as 100 tons, were placed on trailers and pulled by tractors over sixteen miles of rough roads to Fort Smith, where they were beached and shoved into the water.

Another difficulty lay in the fact that sudden storms with tremendously strong winds made Great Slave Lake at times impossible ever for large steamers to cross. For a period of several weeks it was not possible to cross the lake to reach Mackenzie River. Despite the obstacles, during the summer of 1942 there was transported over the water route a tonnage greater than local operators had carried over it in approximately 25 years prior to that time.

The winter of 1942-43 saw continued activity. A winter road was constructed and generally went into operation from Peace River to Camp Norman. Nearly 900 miles separate the two locations. Supplies and construction material were carried over it, some by tractor-drawn sleighs.

Wells were sunk by a private oil company at Norman Wells. Their capacity and number are not disclosed, but it may be said that they have produced sufficient oil to meet originally specified requirements. Drilling is going on to bring in more of them.

A pipe line is now under way to carry the crude oil from Norman Wells to Whitehorse, Yukon, on the Alcan Highway. There a refinery will be built. Construction of the pipe line has started, and surveying parties are in the wilderness collecting data to determine its location. It will be about 600 miles long.

The Silver Lining

Misgivings encroach on the war effort of many business men — misgivings as to what will be left (recognizable) of the America for which we are fighting. Recently there are flecks of silver in the clouds. The senate and house have remembered, however dubiously, they represent the people rather than the president. And while the bureaucrats show no improvement, John Public is now sure he doesn't like it. And that, for politicians, is dynamite with a short fuse. They would do well to ask supply men what happens when constituents are ignored. Buyers TRY PELCO FIRST because customers have formed our policies for 35 years.

WE'VE SUPPLIED OIL MEN IN OUR AREA FOR 35 YEARS

PELICAN WELL TOOL & SUPPLY CO.

SHREVEPORT LOUISIANA

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Houston
Berwick
Houma
New Iberia
Lake Charles

U. S. Field Operations

Kansas

Pratt County Completions Indicate Important Area

Two recent completions in the Carmi pool area of Pratt County indicate a large producing area, especially in view of the fact that one of the two wells may serve as the first link in a chain connecting the Carmi and North Iuka pools.

Ohio Oil Company's Hineman 1, SW SE NW 31-26s-12w, is the well which may serve to join the North Iuka and Carmi sectors to form one large producing area. The well has been completed in the Arbuckle lime with a 3000-barrel potential. During the completion stages, the well which is on the south edge of the Carmi pool, flowed 67 barrels of oil per hour through 2-inch choke.

The other completion indicating large production is British American Oil Producing Company's Petrowsky 1, SW SE NE 30-26s-12w, which also was completed as a maximum Arbuckle producer to indicate an extension of the Carmi area northward. The well is reported one of the highest in the pool, to substantiate the extension probabilities.

Barber County: Phillips Petroleum Company apparently is preparing for an extensive campaign in Barber and Comanche counties as a result of recent leasing in the area. The company is reliably reported to have acquired approximately 50,000 acres in one block and another 50,000 acres in checkerboard style with a view to drilling 10 wells in the area within the next year. The program probably resulted from Champlin Refining Company's discovery, Allen 1, SE NW SE 22-32s-15w, which was completed as one of the largest wells in Kansas, making 427 barrels of oil an hour from Viola lime pay at 4945-5012 feet.

Ness County: A new pool for northwest Kansas has been opened by Magnolia Petroleum Company with Olson 1, SW SE SE 33-17s-25w, two miles northeast of the Aldrich pool. The well was given a pump potential of 808 barrels of oil and 610 barrels of water daily from Mississippi lime at 4289 feet.

Ellis County: Nate Appleman's Richards 1, SE SE SE 19-11s-18w, is a pool opener for Ellis County. The well is producing from Arbuckle lime, from which 12 barrels of oil per hour was swabbed after an acid treatment. Pay was found at 3510-19 feet. Temporary potential of 84 barrels of oil daily was given the well.

Barton County: The new Barrett pool has been given an extension with Phillips Petroleum Company's Addie 1, SEc NE 36-16s-14w, which on a pump test of Arbuckle lime yielded 12 barrels daily.

Winkler-Koch's Weber 1, C NE SW 12-16s-12w, is testing after swabbing 72 barrels of oil in 6 hours from pay at 3323-25 feet.

Sheridan County: Union Oil Company of California is testing Pratt Ranch 2, NW SE NW 23-8s-26w, in the Studley pool, which the company discovered a few months ago. The discovery well, Pratt 1, is producing from Kansas City lime topped at 3679 feet. It swabbed and flowed 78 barrels per hour during completion.

Stafford County: Skelly Oil Company is opening a new pool with Campbell 1, SW SE SW 34-24s-14w. Saturation was found in Arbuckle lime and pipe set to 4417 feet after drilling to 4431 feet. Hole filled 4000 feet with oil in 4½ hours. It is cleaning out for further testing.

Washita County Showing Starts Active Lease Play

Hopes for a new important Oklahoma oil field in the western part of the state are skyrocketing as a result of preliminary tests at Gulf Oil Corporation's Hopkins 1, C NW SE 8-8n-20w, in Washita County. A large lease play is under way.

The well, approximately 50 miles from the nearest production, set pipe to 5540 feet to test a show in Granite wash at 5552-67 feet. When plug was drilled, after the hole was bailed out and washed out with clear water, the well filled gradually with fluid, started bubbling over and threatened to start flowing through 9-inch casing. The well was shut in for connections. Total depth is 5567 feet.

Pottawatomie County: Stanolind Oil & Gas Company's Perkins 1, SWc 10-8n-3e, has definitely opened a Hunton lime pool in the south Brooksville area. In the first full 24-hour test, well made 341 barrels of oil, 278 barrels in 20 hours through 1-inch choke and 63 barrels in the last 4 hours through varied chokes. Drilled originally to Wilcox sand which was dry at 5474 feet, it was plugged back for the test of Hunton pay at 4856-69 feet. It was treated with 1000 gallons of acid.

Mayes County: Value of the Mazie gas pool in southwestern Mayes County was enhanced with the success of A. B. Chase's Slifer 1, NE SE NW 34-19n-18e, which has gas production estimated at more than 1,500,000 feet from pay at 446 feet. The pay zone was penetrated to 451 feet and additional prospective gas pay remains to be tested. The well is a west offset to Chase's discovery well.

Canadian County: Ace Gutowsky et al have started work at Ted Watson 1, SE SE SW 23-14n-5w, for a test of Wilcox sand expected near 7100 feet. The well is on the northwest trend of Gutowsky's original block on which the new West Edmond field in Oklahoma County was opened, and is about 3 miles northwest of the West Edmond discovery. The location is on a 1000-acre block. Mid-Continent Petroleum Corporation, Sun Oil Company and several smaller companies have acreage in the vicinity.

Okfuskee County: Midco Oil Corporation's Community 1, NE NW NE 24-12n-8e, is shut in waiting for pipeline connections after flowing 700 barrels in 7 hours from Cromwell sand at 3496-3504 feet, to open a new pool. Sunray Oil Company has announced location for a 40-acre west offset, Replogle 1, NEc NW 24-12n-8e.

Illinois Basin

Clinton County Wildcat Has Show in Devonian

Wiser Oil Company's Wessel 1, NE NE SW 22-1n-2w, Clinton County, a wildcat 3 miles southeast of Posey, was coring the Devonian from 2772 feet after finding a show of oil in the top of the formation at 2710 feet. Upper formations were dry.

Black and Pearson's Kluthe 1, 1 mile south of Shattuc, SW SW 22-2n-1w, a wildcat, has set pipe to the Cypress after plugging back from dry Devonian at 2940 feet. Cypress carried a light show and there was some doubt as to whether the well would make a producer in the formation.

Madison County: Eason Oil Company was drilling plug at Mayer 1, SE NW NW 15-4n-6w, a wildcat in the village of Marine, where casing was set to Devonian lime at 1735 feet after plugging back from Trenton at total depth of 2990 feet. The operators were hopeful of completing the test as a 75- to 100-barrel well.

Wayne County: Ohio Fuel Supply Company's Mussbaum 1, C NW SW 13-2s-6e, a wildcat, has set casing on McClosky lime at 3305-18 feet after 2380 feet of oil and 40 feet of salt water were recovered in a 60-minute drill-stem test. Total depth is 3335 feet. The test is the most promising wildcat to be drilled in the county in recent months.

Clay County: Gulf Refining Company's Pilcher 1, 15-5n-5e, an offset to Leland Wagoner's McClosky discovery well in the Iola district, has been abandoned. Saturation was found in McClosky but after plug was drilled the well swabbed dry. Acid treatment was unsuccessful.

Kentucky

Three Carter Oil Company wildcats were listed as new pool openers in west Kentucky this week.

Henderson County: Carter Oil Company's DeVasher 1, SE SE SE 24-O-24, Robard area, on two-hour drill-stem test of McClosky at 2500-06 feet, recovered 1450 feet of clean oil and 90 feet of drilling mud, opening a new area two miles from nearest production.

Carter Oil Company's Cottingham 1, C SE NE 17-O-23, 8 miles south of Henderson, completed in Waltersburg at 1797-1906 feet, for initial production of 119 barrels a day, pumping, without shot.

Union County: Carter Oil Company's Russelburg 3, E ½ SW SE 24-P-21, 3 miles north of Waverly, swabbed 30 barrels an hour from Waltersburg at 1700-1713 feet, making 169 barrels on 8-hour swab test while cleaning out.

Indiana

W. F. Lacy and A. L. Cochran's Fickas 1, SW SW NW 11-7s-10w, wildcat three miles southeast of Evansville, Vanderburg County, is drilling in or near Waltersburg section at about 1750 feet.

West Texas

Pecos County Wildcat Looks Good in Ordovician

Aggressive lease buying was underway in the extreme south portion of the Permian Basin last week on the strength of the Pecos County wildcat of Phillips Petroleum Company, Ada Price 1, C SE NW TC 11, Block 101, having registered adequate production possibilities in Ordovician at 11,555-11,635 feet to warrant the landing of 5½-inch pipe. This prospect is 30 miles southeast of Fort Stockton. The company's original block consisted of 20,000 acres and was checked by core tests and seismograph. Late last year the company leased in excess of 30,000 acres between its drilling block and Fort Stockton. When Price 1 showed considerable gas through rotary mud at 10,555-10,561 feet the company purchased between 25,000 and 30,000 acres to the west and southeast. This second deepest test in the basin is credited with a record section of Permian, and no shows were reported. Protection string of 8⅝-inch was landed at 6901 feet due to cavings.

Yates Deep: Standard Oil Company of Texas' Smith-Douglas 1, southwest edge of the prolific shallow field, recovered sulphur water when tester was used at 8900-9114 feet in Ellenburger, topped at 8734 feet with elevation of 2595 feet. Pipe will be set to test porosity at 8900-30 feet, while an oil producer is anticipated from Basal Simpson at 8687-8731 feet. The company has another deep test scheduled for its Yates field acreage regardless of the outcome of this initial try.

Andrews County: Fullerton Oil Company's Jackson 1, extended Fullerton field ¾ mile east with record potential of 2621 barrels of 43-gravity oil through 1¼-inch choke, gas-oil ratio 800/1. Clear Fork at 6799-7270 feet was treated with 16,000 gallons of acid. Mid-Continent Petroleum Corporation's University 1-B, C NW NE Section 16, Block 13, will seek 2¾ miles southeast extension. The company paid $57,500 cash for this 160-acre lease last month.

Reagan County: Amerada Petroleum Corporation's Johnson 1, a mile north by west of its Barnhart pool discovery, paved the way for major expansion of production in logging base of black shale at 8830 feet with elevation of 2756 feet, 63 feet high. This outpost passed up promising oil and gas shows in Clear Fork series of Permian, and was credited with losing returns at 8946-47 feet, but above main pay level in Ellenburger. Test may be made of the upper zones before attempting to complete in Ellenburger. Skelly Oil Company's University 1-L, between production near the northwest edge of the field, logged base of shale at 9007 feet with elevation of 2775 feet, and will complete through perforations in porous zones in Ellenburger at 9010-9220 feet, total depth.

Gaines County: Stanolind Oil & Gas Company's American 15, initial deep test for Cedar Lake field, was drilling dry lime at 10,010 feet without shows below San Andres. Amerada Petroleum Corporation's Robertson 6, Clear Fork test for east edge of the Seminole field, was drilling dry lime at 7542 feet. Magnolia-Atlantic's H. & J. 1-459, ½-mile south of Russell pool Clear Fork discovery, was drilling at 5340 feet, having entered San Andres at 4500 feet, 17 feet low. Four drill-stem tests between 4812-5170 feet discounted production possibilities from a thick section of broken saturation. Continental Oil Company's Jones 1-A, projected 11,000-foot wildcat, resumed after landing 9⅝-inch at 4570 feet.

Texas Panhandle

Pipe Line Plans Stimulate Drilling

Exploratory work in the sparsely tested counties in the Lower Texas Panhandle has taken an upturn since the announcement of Stanolind Pipe Line Company's proposed 16-inch crude carrier from the Permian Basin to Oklahoma. This line will be the first to cut across the group of counties that have been somewhat neglected by wildcatters due to isolation.

Donley County has been assigned a 7500-foot, or granite test, by Shamrock Oil & Gas Corporation on the Adair tract, Section 15, Block A, J. G. Adair Survey, 8½ miles south by west of Clarendon. Supporting acreage was farmed out by The Texas Company. In Southeastern Donley County, The Texas Company and Stanolind Oil & Gas Company, owners of adjoining 15,000-acre and 12,500-acre blocks, respectively, are pooling a portion of their holdings for a 6500-foot test on the Sam Harle tract, H&GN 46, Block 20.

Stanolind Oil & Gas Company's Corbin 1, C SE SE H&GN 275, Block B-4, Armstrong County, set pipe at 3753 feet, and was drilling lime at 4915 feet with Ellenburger as objective. The same company's Jarrell 1, 2 miles northwest of Bovina, Parmer County, is starting on a 6000-foot contract with 12,000 acres of supporting leases. In Hale County, Amerada Petroleum Corporation's Kurfees 1, situated north of deep seated granite ridge, was drilling anhydrite and dolomite at 4936 feet on an 11,000-foot contract.

North Texas

Wichita County Test Drilling Below Dry Bend

Continental Oil Company's West 1, near the northwest edge of Wichita County, proved dry on drill-stem test at 5267-74 feet in Bend, topped at 5214 feet, and proceed to Ellenburger. Consolidated Oil Company's Laukhauf 1, 3 miles southeast of Wichita Falls, also logged nominal show in Bend, topped at 5233 feet, and was drilling at 5290 feet.

Archer County: Dillard and Frank Wood's Albright 1, 2 1/3 miles southeast of Mankins deep pool was eliminated as a Bend prospect in recovering salty drilling fluid and a trace of dead oil when tester used at 4896-4926 feet, and will continue to Ordovician.

Wildcats: Prospecting is attaining a greater volume each week with the majority of the tests contracted to Ellenburger. Scarcity of shooting crews that are available to small operators will force this group to rely more upon subsurface in locating deep prospects. The more substantial companies have contracted for the services of geophysical parties for long periods so are not affected by the shortage.

Cooke County: Expansion of the deep sand area on the east edge of the Walnut Bend field has been assured by two wells drilled by Sinclair Prairie Oil Company, including Atkins 14, which has set pipe after indicating a good well from Winger sand at 5519-91 feet. The company's Brown 1 was testing at 5590 feet with 5½-inch at 5440 feet, 3 feet above Winger sand. Carter-Gregg Oil Company's Ramsey-Ohio 1, northeast outpost, was drilling shale at 5030 feet.

Young County: Standard Oil Company of Texas and Hanlon & Buchanan's Donnell 4, southeast offset to the partnership's discovery producer in the Murray 2-well Mississippi area, is giving the pool its first Bend lime producer in flowing by heads from perforations in saturation logged at 3747-62 feet. Donnell 4 was scheduled to be a dual-well completion, but failed to produce from Mississippi in drilling to 4610 feet. The partnership's Wells 1, 2 miles east by south of Holbert pool, entered Mississippi at 4662 feet, and was coring at 4670 feet.

East Texas

Wood County Wildcat May Have Two Sands

The central Wood County wildcat of Jackson-Fisher and Fields of the McCarley tract, Oak Grove area, entered Paluxy at 7274 feet and was coring below 7278 feet with expectation that the next core would determine whether a second oil zone would be added. Top of Goodland was called at 7205 feet. This wildcat passed up adequate oil sand in Woodbine to assure the opening of new pool. Owners are to have been offered $900,000 cash and 1/16-over-ride for their well and block on the strength of Woodbine possibilities.

Manziel Pool: Amerada Petroleum Corporation's Rogers 1, northeast offset to discovery, failed to flow when swabbed, and will install tubing packer. Well fills 1700 feet from surface with 32.6-gravity pipe line oil from Paluxy perforations between 6300 and 6242 feet, with water below 6384 feet cased off. Magnolia Petroleum Company's Bailey-Howle 1, south offset to the discovery, logged comparatively little saturation in coring Paluxy to 6339 feet, where drill-stem test was pending, and its Johnson 1 was coring at 6295 feet.

Smackover Tests: Humble Oil & Refining Company's Graham 1, Hunt County, has entered Smackover at 9017 feet, and was coring dense dry lime at 9185 feet. In Kaufman County, Sun Oil Company's Rutledge 1 was drilling at 7940 feet.

Van Zandt County: Hunt Oil Company's Parker-Pure 1, 3½ miles northeast of Edgewood, drilling at 5750 in Georgetown, topped at 4987 feet, and high for the area.

Robertson County: Magnolia Petroleum Company's Doremus 1, 3 miles northwest of Calvert and the first Trinity test for county, entered Travis Peak at 6898 feet, and was drilling dry sand and shale at 6950 feet. Standard Oil Company of Texas is starting an Ed-

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wards lime test to the southwest of the above prospect in Milam County to be on the Calvert E. Smith tract, Francisco Ruiz grant, Sugar Loaf area.

Panola County: Union Producing Company's Pettit lime strike, Black 1, Black survey, flowed 83 million feet of gas and ungauged amount of rich distillate from perforations at 5695-5715 feet, total depth 6576 feet. Development between the discovery and Carthage, two miles southwest, will determine if on a separate structure or a probable extension to the field proper which also produces from Pettit lime.

Southwest Texas

Wilcox Drilling Active In Live Oak County

The Oakville-Three Rivers area of Live Oak County is one of the most active spots following opening of Wilcox sand production and with more deep wells scheduled to be drilled soon.

Henderson Coquat, discoverer of the new Goebel field, will concentrate on development of the Goebel pool. Presently, Coquat has been drilling and coring for Wilcox in Minerva Coquat 1, 1½ miles southeast of Goebel 1.

The same operator is rigging up to drill Goebel 2, southwest of the discovery, and Superior Oil Company (Oklahoma) is preparing to drill an east offset to the discovery. Dirks Bros. and Coquat have spudded Knight 1, Wilcox wildcat five miles southeast of Goebel field, and the latter is reported preparing to drill a Wilcox test northwest of Three Rivers.

Victoria County: Barnsdall Oil Company is making tests on its major extension or a new field one mile northeast of production at North McFaddin. The well was drilled by H. I. Crow, C. L. Tucker and Leslie Johnson and is Skarda 1 on a 111-acre tract, Francisco Perez survey. The well was drilled to 6085 feet, with Barnsdall reported taking interest in the test after it found these sands. A test at 5200-05 feet yielded salt water, but some other levels are to be tested that indicated oil and gas production.

Wildcats: Numerous wildcats are being planned for the southwest section. Outstanding among the wildcats to be drilled soon is Sun Oil Company's 10,000-foot test in the Yturria field, Starr County, which will be the deepest ever drilled in the area. Amerada Petroleum Corporation and Alder Oil Company are preparing to drill a Wilcox test four miles northwest of Cheapside in Gonzales County. Five miles southeast of Waelder, Baldridge & King are preparing to drill a 5500-foot Wilcox test.

Arkansas Fuel Oil Company is preparing to drill a Wilcox test five miles east of Kenedy in Karnes County, on a Phillips Petroleum Company farm-out. Dan Auld has taken a block and plans a 7500-foot test on Butler land in northeast corner of Carlos Martinez grant, northeast of Kenedy.

Starr County: Sun Oil Company has cored three gas sands in a wildcat four miles northeast of Rincon field. Bottomed at 7276 feet, it logged 22 feet of gas sand above 7100 feet and two sands below that depth.

Texas Gulf Coast

Stowell Success Spurs Work in Chambers County

Considerable new activity has started in Chambers County since the size and extent of the prolific field at Stowell became apparent. The last well to create interest is John Mayo, Kirby Petroleum Company and Wynn Crosby Drilling Company's Jackson 1 in the Jackson Pasture area, seven miles northeast of Smith Point. This well, in John S. Roberts survey, on a drill-stem test through perforations at 8102-08 feet, using 3/16-inch and ¼-inch top and bottom chokes, flowed 4 barrels of 62.5-gravity condensate hourly with the working pressure mounting to 2500 pounds. Tubing has been run for a production test. Total depth is 9515 feet with 5½-inch casing set to 8200 feet.

Wildcats: Butcher-Arthur Company is preparing to drill a 6000-foot wildcat 5 miles north of Wallisville in the old Moss Bluff area of Chambers County. The location is on a 113-acre lease in J. McFaddin survey.

Rowan Drilling Company is preparing to drill Broussard 1, 8300-foot wildcat 4 miles northeast of Fannett field in Jefferson County, on a 100-acre tract in Stephen Eaton survey.

Shell Oil Company has staked McFaddin Trust 16, a 10,750-foot wildcat southeast of production at Clam Lake, Jefferson County, T&NO Section 352. This will be among the deepest tests ever drilled in the area.

Katy: Ohio Oil Company has completed an oil producer in the 6800-foot sand at Katy in Waller and Harris counties. Smock 1 was perforated at 6865-68 feet and flowed 144 barrels per day through ⅛-inch choke. Total depth is 7446 feet with 5½-inch casing set to 7160 feet. The well is on the north flank of the dome and is west of the same sand opened by Humble Oil & Refining Company five weeks ago. The field now has two oil wells in the 6800-foot section and two in the 6600-foot horizon.

South Louisiana

Reddell Area Wildcat Indicates New Field

Interest has been focused on an indicated new distillate discovery in the Reddell area of Evangeline Parish. Haas 1, Section 22-4s-1w, was drilled by Danciger Oil Refining Company and the shows were found in the Sparta sand at 9720 and 9950 feet. It stopped drilling at 10,510 feet and electrical survey was run to 10,470 feet. Sparta was picked around 9500 feet, and the indicated production horizons correspond to the Sparta at Ville Platte. It has been cored deeper and should be inside the Wilcox section. This structure, which has been tested before, is regarded as a large one. Based upon the sand shows higher in the hole, it is reported that Humble Oil & Refining Company, Continental Oil Company, Tide Water Associated and Amerada Petroleum supported the deepening of the well.

Pine Prairie: Pan American Production Company has been making flow tests in the Sparta section in Cromwell Land & Mineral 2, Section 2-4s-1w, at Pine Prairie, Evangeline Parish, the section having been opened to production only a few months ago. Perforations have been made at 8462-72 feet and 8481-8522 feet, and 8617-38 feet, 8645-55 feet and 8660-84 feet.

St. Charles Parish: Gulf Refining Company has abandoned Delta Securities 1, Section 18-15s-22e, projected 10,000-foot wildcat in the Bayou Coube area. This well quit at 6457 feet, thus indicating that sand conditions were not as expected or that the salt was encountered high.

North Louisiana

Caddo Parish Test Reports Gas Show

In the Latex area Frank J. Hall et al's Kent Breard 1, SE 9-18n-16w, Caddo Parish, topped Pettit lime at 5585 feet. It encountered gas show at 5586-5639 feet in broken lime. Drilling below 5800 feet operators expect to explore Travis Peak at approximately 6000 ft. It is located on the south flank of the Caddo-Pine Island uplift and is north of Waskom.

Gloyd lime at 5030-43 feet in Rodessa section showed distillate at Durbin Bond et al's wildcat, D. A. Simpson 1, SW SE 17-16n-15w. It is scheduled to top Travis Peak before reaching 6500 feet and was drilling in shale in Glen Rose at 5602 feet.

Claiborne Parish: Frankel et al's Muslow 1, S½ NE NW 30-21n-7w, wildcat drilling on the Homer dome, topped shallow Cotton Valley at 4090 feet. It showed mud cut with oil and gas in drill-stem test in Cotton Valley at 4275-4340 feet.

Bienville Parish: At Lake Bistineau, a 1¾-mile west extension, Electric Gas & Oil Company's State 1, W½ 8-16n-10w, cemented 7-inch casing to 5513 feet to test Pettit lime at 5214-54 feet. On preliminary test it flowed 37 million feet of gas and a slight spray of distillate.

Mississippi

Lincoln County Discovery Making Small Pumper

In Lincoln County, four miles northwest of Brookhaven, The California Company's discovery, Smith 1, NW NW 4-7n-7e, is installing pump to complete. This wildcat has averaged flowing 25 to 30 barrels of low-gravity oil daily from deep Tuscaloosa for more than three weeks. It drilled to 12,229 feet and was plugged back to 10,460 feet. Perforations were made for production at 10,288-322 feet.

One half mile east of the new deep strike, The California Company was rigging up to explore deep zone equivalent to Rodessa at approximately 11,000 feet at Hattie Smith 1, NW NE 4-7n-7e. The position of this new test is believed more favorable in which to test for production in the numerous sands which were picked up with shows of oil and gas in the discovery well.

Wayne County: Gulf Refining Company's Davis 1, ne se 2-9n-9w, stopped drilling in Eutaw at 5710 feet. It cored 20 feet of sand in Eutaw horizon. Twelve feet of sand in the top section of the core showed oil. Lower section of core was reported to have shown only salt water.

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California

Third Zone Produces In Rio Vista Gas Field

A deep zone gas discovery made in the Rio Vista field, Sacramento County, may prove to be the most important California find of the first half of 1943. This gas field, covering approximately 25,000 acres, already had reserves in two upper zones with an ultimate recovery estimated at around 3,000,000,000,000 cubic feet. Conceivably, the newly discovered deep zone may be present throughout the greater part of the field; and its indicated richness in first tests suggests its ultimate recovery possibilities may amount to at least half as much as that from sands already producing.

The discovery is a joint venture of Standard Oil Company of California and The Texas Company, with Standard doing the drilling on a large tract of undivided acreage they hold in the heart of the easterly part of the field proper. The well, Midland Fee 1-5, is in NE NE NE 4-3-2, and was drilled to 4540 feet.

The productiive sands, up to the present, are the two zones known as the green sand (Domengine) which is the shallower; and the white sand (Ione).

The new deep sand was topped at about 4440 feet. On a first test of an interval 4439-4457 feet, with a ⅜-inch bottom-hole choke, the return was at a rate of 5,700,000 cubic feet daily. On a second test of a lower interval, with sand open from 4462 to 4553 feet, the well made a flow of 6,200,000 cubic feet daily rate, also through a ⅜-inch orifice. A final test was not made as more of the sand section remained to be examined, and the hole was being cored deeper.

Unconfirmed reports at the middle of the week suggested there is a prospect of another gas field discovery in the Thornton area, four miles west of Galt, in Sacramento County. Amerada's wildcat, Capital Co. 1, 35-5-5, which had been drilled to 8367 without showings of consequence in the lower portion of the hole, was plugged back to 3390 feet and a formation test was run on the interval 3330-3360 feet. With the tester open 7 minutes the well developed a flow of 6,500,000 cubic feet daily rate.

Michigan

Drilling Activity At New High for Year

Nineteen drilling permits set a new weekly high for 1943 and 9 wildcat locations pushed the year's exploratory starts to 93 compared to 83 for the same period last year. At the same time 11 wildcat completions accounted for a shallow gas discovery with 10 failures and none of the 7 field completions were outstanding.

Newaygo County: Ohio Oil Company completed Gas Unit 1, C NE 29-15n-11w, for 2,500,000 feet gas in Stray sand at 1158 feet, to confirm gas bearing structure in Woodville field, previously developed for 2800-2900 foot Traverse oil production. New drilling for Traverse oil appeared to limit the size of the reserve materially. Ohio's Vaughan 2, S½ NW NE 29-15n-11w, east offset to the discovery, was a mediocre well after acid to Traverse, while Ohio's Pillsburry 2, S½ NE SE 29, ½ mile south of the discovery, may be abandoned at 2865 feet. Only a light show oil with salt water showed after acidizing both top and second pay sections.

Missaukee County: Rated as the state's leading oil prospect for new development last January, Enterprise area now has been all but cancelled out for producing from Dundee lime at 3150-3300 foot level. Sun Oil Company has abandoned work on Dundee formation on State A1, S½ SW NW 11-23n-5w, which was rated a discovery, and now will renew attempts to produce Richfield section at 4547-96 feet. This test originally was drilled to 4596 feet and then tested at 3200-3300 feet in Dundee by setting temporary plug. The well produced 335 barrels of oil in 6 hours on January 15, on first test of Dundee, and then went dead. No production of importance has been established since.

Meanwhile, three offsets, north, south and west, were drilled to Dundee and abandoned. Sun Oil Company now is shutdown for orders on Wilson 1, S½ SE SE 11-23n-5w, ½ mile southeast of the original test, after logging Dundee lime at 3153 feet and picking up salt water at 3242 to 3248 feet. It may deepen to Richfield.

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ARKANSAS

Columbia County—Atlantic, New Pay and Extension: Tide Water-Seaboard's Young 1, ne ne 18-18s-19w, perf Cotton Valley 7210-16 ft, 356 bbls, 40.7-gr, ¼-in, tp 750, cp 500, gor 531-1, td 8356 ft.

Union County—East El Dorado: B. S. J. Corp.'s Jerry A-1 e½ se sw 21-17s-14w, perf 2710-12 ft, pump 50 bbls fluid, 80% sw, td 2734 ft.

Union County—New London: C. H. Lyons' King 1, nw ne 18-18s-11w, perf Walton 5697-5704 ft, flow 120 bbls, ¼-in, td 5838 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Shell's 146-29, se ne sw 29-19-15, pump 103 bbls, black shale 1816, td 2073 ft.

Fresno County—Riverdale: Amerada's Clemente 52-22, sw nw ne 22-17-19, flow 240 bbls 38.5-gr, 63,000 gas, 14/64-in, 540/0 lbs, perf 7920-7930 ft, td 7985 ft (whipstocked and redrilled from 6723 ft).

Kern County—Buena Vista Hills: Standard's 80-7D, nw se nw 7-32-24, pump 34 bbls 13.4-gr oil, 9 bbls water, 218 ft perf 2928 ft, td 2930 ft.

Standard's 112-7D, se nw se, 7-32-24, pump 46 bbls 24 gr, 248 ft perf 3358 ft and cp'd 3105 ft, td 3327 ft.

Standard's 101-11D, se nw ne 11-32-24, pump 72 bbls 25.6-gr, 70 ft perf 2940 ft, td 2942 ft.

Kern County—Elk Hills: U. S. Navy's 74-2G, sw se ne 2-31-24, pump 27 bbls 23.4-gr, perf 2963-2875 ft, td 3057 ft.

U. S. Navy's 21-3G, ne nw nw 3-31-24, pump 133 bbls 20-gr, 35 ft perf 2944 ft, td 3024 ft, pd 2945 ft.

U. S. Navy's 36-27S, sw ne sw 27-30-24, pump 202 bbls, 53 ft perf 3327 ft, td 3358 ft, pd 3330 ft.

Kern County—Kern Front: Standard's 63, se se se 15-28-27, pump 26 bbls 14.1-gr oil, 12 bbls water, 280 ft perf 2270 ft, td 2280 ft.

Kern County — Midway - Sunset: Chanslor Canfield Midway Oil Co.'s G-64-9, se sw ne 9-32-23, pump 10 bbls 19-gr oil, 10 bbls water, 111 ft perf 2749 ft, Kinsey sand 2552 ft, td 3121 ft, pd 2750 ft.

Kern County—Poso Creek-Premier: L. C. Dougan's Atlantic-Sesnon 3, se ne se 17-28-27, pump 16 bbls 15-gr oil, 24 bbls water, perf 2947-2987 ft, td 3007 ft.

Standard's 5-23, se ne se 5-28-27, pump 11 bbls nearly all water, 235 ft perf 2865 ft, td 2865 ft.

Standard's 5-27, ne sw ne 5-28-27, pump 70 bbls 13.4-gr oil, 36 bbls water, 197 ft perf 2878 ft, td 2880 ft.

Kern County—Round Mountain: Crestmont Oil Co.'s Staley 9, ne sw se 8-28-29, pump 90 bbls 17.2-gr, 29 ft perf 1805 ft, Vedder 1785 ft, td 1805 ft.

Kern County—McVan: Pacific Western Oil Corp.'s Enas Fee 6, sw nw sw 21-27-27, pump 151 bbls 12.3-gr oil, 13 bbls water, 45 ft perf 2170 ft, td 3257 ft, pd 2170 ft.

Los Angeles County — Wilmington: Long Beach Oil Development Co.'s Z-1-1-Z, 110 ft swly along n/l Seaside fr w side Pico Blvd., thence 347 ft sely at r/a, 2-5-13, pump 219 bbls 17.9-gr, 130,000 gas, perf 2578-2791, 2816-2998 ft, Ranger 2582 ft, td 3000 ft.

Los Angeles County—Old Well Deepened: Union Pacific's E-37, 6211 ft s 3104 ft e c/l, Ford and Anaheim, pump 151 bbls 29.8-gr oil, 30 bbls water, perf 4036-4125, 4190-4332 ft, otd 3975 ft, deepened to 4332 ft.

Orange County — Huntington Beach: McVicar-Rood-McCallen's 3, 380 ft n, 380 ft e c/ls Clay and Florida Sts., 2-6-11, pump 70 bbls 19.5-gr, 120,000 gas, 30 ft perf 3517 ft, td 3517 ft.

Standard's Huntington A-46, 4270 nwly along c/l Wesley Ave., fr c/l 23rd St. thence 250 ft swly at r/a, pump 150 bbls 14.7-gr, 387 ft perf 3418 ft, td 3490 ft, pd 3420 ft.

CALIFORNIA WILDCAT

Los Angeles County — Failure: Anderson-Prichard's Anderson-Prichard-Ramsey 1, sw sw sw 24-2-17, Chatsworth area, abnd 1645 ft.

ILLINOIS

Clay County: H. Luttrell et al's Reed Hrs 10, sw sw nw 15-5n-5e, Weiler 2122-32 ft, Ben 2284-2301 ft, Aux V 2324-55 ft, 228 bbls, 2355 ft.

Clinton County: Murphy & Goldsmith's Fee 5, ne ne nw 2-2n-2w, Tar Spgs 814-87 ft, salt water disposal well, 887 ft.

Adams O&G Co.'s Lippert 1, c s½ nw 26-2n-1w, Devonian lm 2963-3103 ft, salt water disposal well, 3103 ft.

Effingham County: Kingwood's See 3, ne sw se 27-6n-5e, Ben 2288-2321 ft, Aux V 2353-70 ft, 102 bbls, 2402 ft.

P. D. Lynch's Bobard 1, nw ne nw 34-6n-5e, abnd 2232 ft.

Texas Co.'s Prather 4, se se ne 34-6n-5e, Rosiclaire 2402-12 ft, 80 bbls, 2412 ft.

Gallatin County: Gulf's Bahl 5, sw sw sw 15-8s-9e, Tar Spgs 2182-90 and 2210-14 ft, Cyp 2491-2510 ft, 92 bbls, 2515 ft.

Hamilton County: Texas Co.'s Davenport 2, se se ne 11-6s-6e, Aux V 3039-63 ft, 62 bbls, 3063 ft.

Texas Co.'s R. Hall 5, se se ne 28-6s-6e, Tar Spgs 2474-78 ft, 15 bbls, 3116 ft.

Oil Carriers Inc.'s Irvin 2, nw ne ne 35-6s-6e, Aux V 3093-3116 ft, 95 bbls, 3113 ft.

J. P. Washburn's Arnold 1, nw ne se 17-6s-7e, abnd 3341 ft.

Lawrence County: Dee Bros et al's Lewis 1, se se ne 27-2n-12w, Biehl 1372-92 ft, 40 bbls, 1403 ft.

Wabash County: V. U. Bay et al's Hockgeiger A-2, sw nw se 14-1s-13w, abnd 2629 ft.

C. E. Skiles' Murray-Burkett 2, ne se se 34-1n-13w, abnd 2694 ft.

Wayne County: Texas Co.'s Lawrence-Malone Comm 1, w½ nw se 27-1s-6e, McCl 3194-3201 ft, 25 bbls, 3201 ft.

Pure's Pike 1, ne nw ne 14-1s-7e, McCl 3224-83 ft, 144 bbls, 3283 ft.

Deep Rock's Stroup 3, ne sw 29-1s-7e, L. O'Hara 3188-9n ft, 182 bbls, 3196 ft.

Pure's Garrison B-2, se ne sw 35-2n-7e, Aux V 2947-70 ft, 14 bbls, 2970 ft.

White County: Sun's Renshaw 1, se ne se 1-5s-10e, Tar Spgs 2305-15 ft, 23 bbls, 2315 ft.

OLD WELLS DEEPENED

Wabash County: Continental Oil's Williams 1, sw ne ne 17-2s-13w, otd 2409 ft, Ben 2539-64 ft, 37 bbls, 2564 ft.

ILLINOIS WILDCATS

Bond County—Failure: Louis Lilly's Martin 1, se sw se 24-2n-4w, abnd 1267 ft.

Clay County—Discovery: Leland Waggoner's John Pilcher 1, sw nw 13-5n-5e, McCl 2452-58 ft, 699 bbls, 2462 ft.

Fayette County—Failure: B. M. Heath et al's McMillan 1, se sw 22-6n-3e, abnd 2149 ft.

Hamilton County—Failure: S. C. Yingling's Malone 1, s½ se nw 11-5s-6e, abnd 3542 ft.

White County—Failure: A. H. Anderson's White County Farm 1, se ne sw 7-5s-10e, abnd 3310 ft.

INDIANA

Gibson County: L. J. Lloyd's Simpson 1, nw nw nw 23-1n-10w, Salem 2084-99 ft, 10 bbls, 2108 ft.

Pike County: Chester Oil Co.'s Shaultz 2, nw sw sw 16-1s-9w, pay 1295-99 ft, 9 bbls, 1299 ft.

Posey County: Cherry & Kidd's Walgrove Corp. 4, sw se sw 11-4s-14w, abnd 2690 ft.

Felix Jablonski's Renwich Properties 1-A, se sw sw 1-7s-12w, abnd 1929 ft.

INDIANA WILDCAT

Perry County—Failure: Krause & Michel's Caray 1, c se se 7-6s-3w, abnd 610 ft.

KANSAS

Barber County—Medicine Lodge: Barbara Oil Co.'s Mark 1, c ne 19-33s-13w, Simpson 5072 ft, abnd 5085 ft.

Barton County—Kraft-Prusa: Winkler-Koch and Blair's Hitschman 1, c ne se 32-16s-11w, Arb 3367 ft, abnd 3395 ft.

Republic Nat Gas Co.'s Radenburg 2, c se se 8-17s-11w, Arb 3301-03 ft, 2000 gals acid, pump 73 bbls, 3308 ft.

Cities Service's Hogan A-6, ne ne ne 11-17s-11w, Arb 3394 ft, pump 448 bbls, 3415 ft.

Barton County—Silica: Stanolind's Panning B-9, c e½ e½ ne 10-20s-11w, Granite 3920 ft, input well, 3922 ft.

Magnolia's Roetzel 10, c n½ se ne 25-20s-11w, Arb 3266 ft, pump 144 bbls, 3274 ft.

Butler County—Stern: H & M Drlg Co.'s Tabing 2, near c s½ se 21-27s-6e, Simpson 2995 ft, abnd 3055 ft.

Butler County—Burgess area: Rex & Morris et al's Brewer 1, ne ne sw 23-28s-7e, Miss 2745 ft, pump 50 bbls, 2767 ft.

Ellis County—Koblitz: Skelly's Koblitz 1, c e½ ne 22-12s-18w, sand 515 ft, input well, 871 ft.

Ellis County—Ellis: Darby's Huber A-2, c w½ se nw 31-12s-20w, Arb 3838-43 ft, pump 616 bbls, 3848 ft.

Ellsworth County—W Stoltenberg: Gulf's Svoboda 6, c sw se 8-16s-10w, Arb 3309 ft, 1000 gals acid, pump 130 bbls, 3330 ft.

Ellsworth County—Stoltenberg: Magnolia's Schroeder 4, c sw ne 33-16s-10w, Arb 3301 ft, 500 gals acid, pump 130 bbls, 3320 ft.

Jefferson County—McLouth: Killness et al's Mosberger 1, c ne se 21-9s-20e, McLouth 1414 ft, 3,500,000 gas, 1417 ft.

Jackson & Ketrell's Herries 1, c n½ n½ ne 8-10s-20e, McLouth 1500 ft, 1,750,000 gas, 1519 ft.

Leavenworth County—McLouth area: Slottman's Bankers Life 1, c se se 25-9s-19e, McLouth 1467 ft, abnd 1473 ft.

Leavenworth County — McLouth: Charles Miller's Bess 3, c s½ sw sw 6-10s-20e, Bartles

Wells Completed in the United States in Week Ended July 3, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama												1		3
Arkansas	3				3						3	6	115	110
California	18				18	1			1	1	20	28	757	399
Colorado													10	5
Georgia													1	2
Illinois	12		2	5	19	1	1		4	5	24	21	894	985
Indiana	2			2	4				1	1	5		122	197
Kansas	19	2	2	8	31		2		10	12	43	24	821	817
Kentucky	3			1	4				3	3	7	10	152	75
Louisiana	7			4	11		1		2	3	14	18	311	537
North Louisiana	4			1	5				1	1	6	10	138	
South Louisiana	3			3	6		1		1	2	8	8	173	
Michigan	3	1		3	7			1	10	11	18	16	259	354
Mississippi	4				4				2	2	6	1	21	67
Missouri													7	16
Montana												5	106	87
Nebraska													1	25
New Mexico	3			1	4						4	5	127	209
New York	17		7		24						24	25	590	598
Ohio	3	8		5	16						16	16	431	561
Oklahoma	6		1	5	12	3	2		2	4	19	37	653	777
Pennsylvania	35	1	16		52	1					53	59	1,347	2,068
Tennessee														7
Texas	37	1		20	58	2	2	1	13	16	76	72	1,961	3,267
E. T. Bor.Co.'s								1		1	1	2	11	
E. Texas. Field													4	
Rest of E. Texas	3	1			4						4	8	119	
North Texas	6			13	19	2	1		2	3	24	15	454	
West Cent. Texas	3			1	4		1		3	4	8	2	167	
West Texas	9			3	12				3	3	15	15	444	
Tex. Panhandle	2				2							3	103	
G. Coast, Upper	4				4				3	3	7	8	149	
G. Coast, Lower	6			1	7				1	1	8	9	293	
Swest Texas	4			2	6				1	1	7	7	182	
S. Central Texas												3	33	
West Virginia	2	12		3	17						17	10	301	361
Wyoming														42
Total U. S.	174	25	28	57	284	8	8	2	48	58	350	356	9,053	11,569

* Includes distillate wells. † Includes salt water disposal wells.

The OIL WEEKLY'S TRADING POST

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■ FOR SALE: 3975′ of 5-9/16″ regular API drill pipe. 1300′ Hughes FH drill pipe. 1-3 speed Union Tool Drawworks. General Oil Tool Company, Burrton, Kansas.

■ 4000′ GRADE D 3½″ OD 13.30-lb. range 2 internal flush external upset drill pipe equipped with Hydril tool joints; also, 5000′ full hole 4½″ OD 16.60-lb. range 2 drill pipe. Chas. B. King, Panhandle Bldg., Wichita Falls, Texas.

■ PRODUCTION AND EQUIPMENT: 50 wells average depth 1700 feet. Present daily production slightly more than 25 barrels 36 gravity oil. Most wells produce no water. Production can be increased by cleaning out. Also 10 presently dead wells which can be cleaned out and put back on production. Two deeper oil bearing formations within 800 feet. Leases cover 850 acres. Boundaries less than three-fourths drilled. Only two inside wells drilled to balance power. No dry holes. Also 6000 acre block with one producing well on it adjoining above production. Price: Pay us ceiling prices for equipment, all in good condition, and we will give you the production which is still good for minimum net return of $500.00 per month during next ten years. Owner retiring under doctor's orders. Don't write; come and see. Alexander Boynton, 615 Insurance Bldg., San Antonio, Texas.

■ FOR SALE: 3 complete Power Rotary Drilling Rigs with approximately 7000 feet 3½″ OD Drill Pipe and 12,000 feet of 4½″ OD Drill Pipe. All Waukesha, Butane Equipped Motors and Gardner Denver 14 Pumps. These rigs are all running and in good condition. Box 331, Carmi, Illinois.

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1352 ft, shot 100 qts, pump 30 bbls, 1411 ft.

McPherson County—Crowthers: Westgate-Greenland's Pisel 2, c nw sw 26-17s-1w, Miss 2772 ft, 500 gals acid, pump 1097 bbls oil, 274 wtr, 2790 ft.

McPherson County—SW Lindsborg: Vickers' Hoffman 2, c sw sw 25-17s-4w, Viola 3442 ft, abnd 3450 ft.

Phillips County—Ray: Cities Service's Reece E-3, sw se ne 28-5s-20w, Arb 3557 ft, pump 389 bbls, 3699 ft.

Pratt County—Cunningham: Drillers' Gas 1, c nw sw 7-26s-11w, Viola 4134 ft, 500 gals acid, flow 3000 bbls, 4139 ft.

Pratt County—Carmi: Shell's Briggeman 1, sw sw sw 28-26s-12w, Arb 4272 ft, 2000 gals acid, flow 3000 bbls, 4315 ft.

British American's Petrowsky 1, sw se ne 30-26s-12w, Arb 4280 ft, 2000 gals acid, flow 3000 bbls, 4311 ft.

Pratt County—Frisbie: Gulf's Gertrude 1, c n wne 8-26s-13w, Lans 3792 ft, abnd 4060 ft.

Pratt County—Cunningham: Drillers Gas' Fitz-Simmons 3, c e½ ne se 34-27s-11w, KC 3485 ft, 4000 gals acid, pump 605 bbls, 3622 ft.

Reno County—Peace Creek: Cities Service's Heylum C-3, sw ne ne 12-23s-10w, Viola 3735 ft, pump 97 bbls, 3744 ft.

Russell County—W Greenvale: Jones & Shelbourne's Hypfer 3, se se nw 31-14s-12w, temp abnd.

Russell County—Gorham area: Eldorado Refining Co.'s Mills 2, c s½ ne sw 12-14s-15w, Lans 3016 ft, 1500 gals acid, pump 26 bbls, 3299 ft.

Russell County—Trapp: Coralena Oil Co.'s Sellens 4, c s½ nw se 19-15s-13w, Arb 3276 ft, 1000 gals acid, pump 598 bbls, 3291 ft.

Saline County—Hunter: Deep Rock's Threlkeld 1, ne ne se 19-16s-1w, Miss 2683 ft, pump 629 bbls oil, 1468 wtr, 2698 ft.

Stafford County—Zenith: Transwestern Oil Co.'s Krey 1, c se se 36-23s-11w, Viola 3688 ft, 2000 gals acid, flow pot 2302 bbls, 3725 ft.

KANSAS WILDCATS

Barber County—Failure: Continental's Marchel 1, sec 2-32s-13w, Viola 4546 ft, abnd 4565 ft.

Edwards County—Failures: Stanolind's Ramsey 1, swc se 3-24s-16w, Topeka 3280 ft, Arb 4236 ft, abnd 4249 ft.

Broderick & Gordon's Miller 1, c se sw 5-26s-18w, Viola 4805 ft, Arb 5059 ft, abnd 5085 ft.

Ellis County—Failure: Darby's Spilker 1, swc 1-13s-20w, Lans 3462 ft, abnd 3852 ft.

Ellis County—Discovery: B. & R. Drilling Co.'s Leiker 1, c n½ nw nw 14-15s-18w, Lans 3269 ft, pay 3292-96 ft, pump 114 bbls, grav 39.8, 3622 ft.

Jefferson County—Failure: Charles Miller's Blinn 1, nwc se 12-11s-20e, Miss 1430 ft, abnd 1556 ft.

McPherson County—Failure: M. Coats et al's Elbe 1, sec 19-18s-5w, Viola 3803 ft, Arb 3925 ft, abnd 3957 ft.

Rice County—Failure: Nelson Drilling Co.'s Perry 1, nwc se 11-19s-6w, Miss 3420 ft, abnd 3445 ft.

Rooks County—Failures: Coats & Mouser's Moore 1, c se nw 10-7s-17w, Arb 3296 ft, abnd 3339 ft.

Carter's Bigge 1, c sw sw 10-7s-18w, Lans 3076 ft, Arb 3516 ft, abnd 3591 ft.

Russell County—Failure: Northern Ordnance's Colliver 1, c ne ne 29-12s-12w, Viola 3280 ft, Arb 3494 ft, abnd 3560 ft.

Russell County—Discovery: Ohio's Strecker 1, c s½ se sw 21-15s-14w, chert 3339-56 ft, 1300 gals acid, pump 267 bbls, 3356 ft.

KENTUCKY

Henderson County: Sinclair Prairie's Bradley 1, 8-N-23, Tar Sprgs 1939-54 ft, 117 bbls, 1954 ft.

McLean County: Stewart & Snyder et al's Major 3, 5-N-25, Mansfield 648-57 ft, 10 bbls, 657 ft.

Union County: Pure's Duncan 1, 13-O-19, Penn 1434-45 ft, 84 bbls, 1445 ft.

Sun's Newman 1, 18-O-19, abnd 1488 ft.

KENTUCKY WILDCATS

Henderson County—Failures: Sinclair Prairie's Cavanaugh 1, 12-N-23, abnd 2796 ft.

Ashland Rfg. Co.'s Gallaway Hrs 1, 2-N-23, abnd 2801 ft.

Union County—Failure: Pure's Mason A-1, 6-O-19, abnd 1532 ft.

SOUTH LOUISIANA

Beauregard Parish—North Bancroft: American Republics' Lutcher-Moore 2-X, 34-5s-13w, abnd 7060 ft.

Iberia Parish—New Iberia: William Helis' Schwing 15, 986 ft s, 788 ft w sec 71 but in 56-12-7e, abnd 4063 ft.

Iberville Parish—Whitecastle: Shell's Wilberts & Sons 27, s 89 deg 27 mins w 2608 ft, thence s 00 deg 9 mins e 850 ft fr ne cor sec 8-11s-12e, 5½-in 9322 ft, open hole, flow 290 bbls, 9/64-in, td 10,285 ft.

St. Charles Parish—Paradis: Texas Co.'s Sunset Realty 12, 10,695 ft s, 1693 ft w nec 8 in 38-14s-20e, 7-in 10,490 ft, perf 10,128-142 ft, flow 260 bbls, 9/64-in, td 10,490 ft.

St. Mary Parish—Bayou Sale: Texas Co.'s State-East Cote Blanche Bay 4, s 28 deg 19 mins w 9057 ft fr USCGS Mon South Bend in Bay T-16s-9e, 7-in 10,160 ft, perf 10,135-45 ft, flow 280 bbls, 9/64-in, td 10,160 ft.

Terrebonne Parish—Dog Lake: Texas Co.'s LLE-Dog Lake 17, 3883 ft, s, 5230 ft e o nw cor sec 3-22s-16e, abnd 9359 ft.

SOUTH LOUISIANA WILDCATS

Calcasieu Parish—Discovery: E. R. Brann's Edgewood Land 1, Perkins area, 330 ft s&w ne c 6-8s-10w, 7-in 5394 ft, perf 5367-79 ft, flow rate 160 bbls 10/64-in, td 5395 ft, opens new field.

St. Landry Parish—Failure: J. S. Abercrombie and Atlatl Royalty's Charles-Community 1, South Leonville area, 23-7s-5e, abnd 10,220 ft.

NORTH LOUISIANA

Caddo Parish—Caddo: Texas Co.'s Harrell 59, c n½ sw, elev 195 ft, perf 2380-81 ft, pump 10 bbls oil, 230 water, 6⅝-in 2602 ft, td 2633 ft.

Caddo Parish—Hosston: Bayou State Oil Corp.'s Owens 2-A, 21-22n-15w, 4½-in 1035 ft, pump 6 bbls, td 1051 ft.

Claiborne Parish — Haynesville: Robert A. Stacy's Hunt-Garrett 3, sw sw 8-23n-8w, perf Pettit lime 5453-63, 5484-96 and 5506-16 ft, 3000 gals acid, flow 66 bbls 2 hrs, ½-in, td 5570 ft.

LaSalle Parish — Catahoula Lake: Carter-Phillips' Catahoula C-4, se nw 6-6n-4e, perf Wilcox 4080-88 ft, flow 252 bbls, ½-in, 7-in 4108 ft, td 4450 ft.

Winn Parish—Calvin: Hunt Oil Co.'s Goodpine F-28, ne sw 24-12n-5w, abnd 6344 ft.

NORTH LOUISIANA WILDCAT

Catahoula Parish—Failure: California Co.'s Eckhardt 1, ne ne 12-9n-7e, abnd 5860 ft.

MICHIGAN

Clare County—North Winterfield: Taggart Bros. Co.'s State S7, c ne, 17-20n-5w, Stray sand, 2,100,000 gas, 1290 ft.

Taggart Bros. Co.'s State S8, c sw, 9-20n-5w, abnd 1372 ft.

Newaygo County—Woodville: Ohio's Vaughan 2, s½ nw ne, 29-15n-11w, Traverse lime, swab 42 bbls after acid, 2850 ft.

Osceola County—Reed City: Louis Rose's State 1, s½ sw se, 17-18n-10w, Monroe lime, abnd 3810 ft.

Osceola County—Evarts: Sun's Stein-Wilcox 1, n½ nw se 27-18n-8w, Dundee lime, flow 159 bbls, 3706 ft.

Van Buren County—North Bangor: Harris Oil Co.'s Piefer 2, ne nw sw 9-2s-16w, Traverse lime, pump 75 bbls natural, flow 455 bbls. 16 hrs. after 2000 gals acid, td 1016 ft.

Socony Vacuum Oil Co.'s Brandt 1, sw nw nw 9-2s-16w, Traverse lime, abnd 1022 ft.

MICHIGAN WILDCATS

Allegan County—Failure: C. J. Smith's Lane 1, nw ne sw, 14-1n-14w, Traverse 1255 ft, abnd 1324 ft.

Isabella County—Failure: Rowmor, Leonard & Bartlett's Lathm 1, se se se 25-16n-6w, Dundee 3851 ft, abnd 3897 ft.

Isabella County—Failure: Les T. Barber's Cairl 1, s½ se se. 30-13n-6w, Dundee lime 3872 ft, abnd 3878 ft.

Jackson County—Failure: J. W. Kuhn's Richardson 1, c nw se 1-3s-3w, Traverse lime 1694 ft, abnd 2204 ft.

Livingstone County—Failure: J. T. Norris' Stowe 1, c sw sw, 9-2n-3e, Dundee 1980 ft, abnd 2096 ft.

Mecosta County—Failure: Sun's McCormack 1, s½ se se, 23-16n-8w, Dundee 3840 ft, so & w 3847 ft, abnd 3850 ft.

Newaygo County—Gas Discovery: Ohio Oil Co.'s Gas Unit 1, c ne, 29-15n-11w, Stray sand 1140 ft, 2,500,000 gas, td 1158 ft.

Ogemaw County—Failure: R. B. Tamblyn's Everett 1, se se nw 10-22n-4e, abnd 1584 ft.

Roscommon County—Failure: Gulf's State R1, s½ se sw 13-24n-1w, Dundee 2807 ft, Richfield 4142 ft, abnd 4300 ft.

Van Buren County—Failure: Augie Busk's Filbrandt 1, se nw nw, 3-1s-16wx, Traverse lime, abnd 1100 ft.

Fisher-McCall Oil & Gas Co.'s Donovan 1, se sw sw, 25-2s-16w, Traverse lime, abnd 1210 ft.

MISSISSIPPI

Madison County—Pickens-Sharpsburg: Carter's Massey 2, nw ne 10-11n-3e, Wilburn sand 4835 ft, flow 230 bbls, 3/16-in, td 4843 ft.

Phillips' Maley 2, sw ne nw 4-11n-3e, elev 211 ft, Midway 3124 ft, Chalk 3840 ft, Wilburn sand 4842 ft, cut fault 4900 ft, abnd 5050 ft.

Yazoo County — Pickens-Sharpsburg: Sinclair-Wyoming's Wilburn 8, ne sw 32-12n-3e, Eutaw, pump 215 bbls 18 hrs, 4838 ft.

Tip Ray et al's Wilson 1, sw nw se 30-12n-3e, Eutaw, pump 190 bbls, 4885 ft.

MISSISSIPPI WILDCATS

Jackson County—Failure: Humble's Dantzler 1, 20-5s-8w, abnd 11,378 ft.

Stone County—Failure: R. W. Norton's Dantzler 1, sw sw 10-4s-10w, abnd 8350 ft.

NEW MEXICO

Eddy County: Barney Cockburn et al's State 9, c ne se 36-16s-30e, flow 100 bbls 2-in, natural, 3050-3100 ft.

Superior Oil Co.'s Foster 3, c se nw 17-17s-31e, flow 80 bbls 2-in, shot 440 qts 3368-3510 ft, td 3520 ft.

Lea County—Maljamar: Geo. Turner et al's Simon 1-B, c se se 31-17s-32e, elev 3869 ft, salt 1167-3515 ft, abnd 4527 ft.

Lea County—Rhodes: The Texas Co. et al's Rhodes 3-B, c ne se 28-26s-37e, flow 159 bbls 2-in, shot 60 qts 3288-3330 ft.

OKLAHOMA

Carter County—Cox: Jim Herrell's Cox 2, nw ne sw 22-2s-2w, sand 1164-67 ft, abnd 1418 ft.

Comanche County—Fort Sill: Texas Co.'s Weaver 1, nw nw ne 14-3n-10w, Pontotoc 1710 ft, abnd 2550 ft.

Creek County—Glenn: Gulf's Pitman 41, c n½ se se 7-17n-12e, Glenn 1407 ft, shot 230 qts, pump 15 bbls in 5½ hrs, 1562 ft.

Gulf's Pitman 42, sw nw sw 8-17n-12e, Glenn 1415-1560 ft, input well, 1566 ft.

Creek County—Bristow: P. C. Greer's Dressler B-1, sw nw sw 15-17n-8e, Layton 1373 ft, abnd 1730 ft.

Kay County—Vernon: D. Morgan's Klink 2, nw sw nw 21-29n-1e, Miss chat 3380 ft, pump 45 bbls oil, 30 wtr, 3446 ft.

Oklahoma County — Edmond: Harper & Turner's Hamman 1, c ne sw 8-14n-2w, Bartles 5871 ft, flow 31 bbls, 5898 ft.

Osage County—Osage City: R. Neal's Osage 2, c nw nw 11-21n-8e, Calvin 1678 ft, shot 40 qts, pump 12 bbls, 1693 ft.

Pontotoc County—Ada area: Argo Oil Co.'s Choate 1, se ne nw 31-4n-6e, McLish 3528 ft, abnd 3542 ft.

Pottawatomie County—NW Earlsboro: Crosbie's Burk 1, ne sw sw 1-9n-4e, Hunton 4218 ft, flow 240 bbls, 4243 ft.

Seminole County—W. Grayson area: H. Dimond et al's J. Powell 1, sw ne se 10-6n-5e, Caney 3253 ft, abnd 3260 ft.

Seminole County—Seminole City: Wood's Shaw B-1, nw se se 28-9n-6e, Calvin 2548 ft, shot 15 qts, pump 50 bbls oil, 150 wtr, 4152 ft.

OKLAHOMA WELLS DEEPENED

Carter County—Fox: J. A. Johnson's Fee 6, se se nw 27-2s-3w, otd 3500 ft, Penn, flow 18 bbls, 3530 ft.

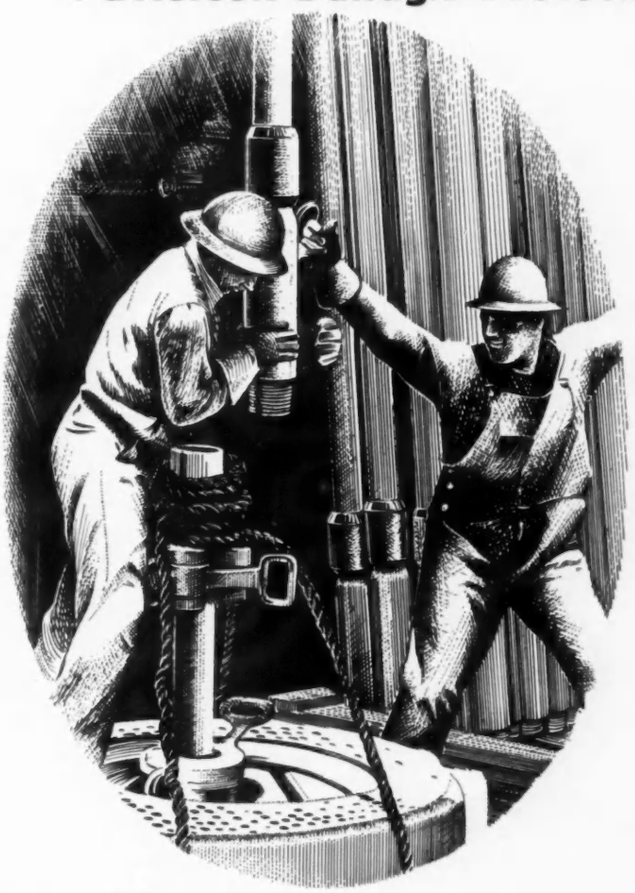
Okfuskee County—Weeletka: W. B. Wells' Moore 6, c sw ne 14-10n-11e, otd 2540 ft, Cromwell 2953 ft, abnd 2990 ft.

Stephens County—West Locio: A. Singer's Watson 1, ne nw sw 6-3s-5w, otd 1215 ft, sand 1210-29 ft, 1500 gals acid, pump 9½ bbls, 1229 ft.

OKLAHOMA WILDCATS

Cleveland County—Discovery: Deep Rock's Harris 1, ne nw ne 11-10n-1w, Dolo 6410 ft,

The *right* way to install drill pipe —always with a Patterson-Ballagh Protector



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PATTERSON-BALLAGH

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set pipe 6526 ft, 1000 acid, flow 249 bbls 16 hrs, 6603 ft.

Creek County—Failure: Shell's Townsend 1, nw se se 36-17n-7e, Wx 3592 ft, abnd 3613 ft.

Hughes County — Discovery: Deep Rock's Price 1, c ne ne ne 29-7n-10e, Cromwell 3809 ft, 2nd Cromwell 3865 ft, flow 572 bbls, 3852 ft.

Pawnee County—Failure: Keener O&G Co.'s Ross 1, se se nw 29-22n-7e, 2nd Wx 2990 ft, abnd 3026 ft.

NORTH TEXAS

Archer County: M. T. McLaughlin et al's Richardson 1, 330 ft snl and 798 ft wel lot 14, T. McCoy sur A-269, abnd 1164 ft.

Baylor County: Consolidated Oil Co.'s Portwood 5-Z, 916 ft nsl and 466 ft wel sw TE&L 1573, abnd 1395 ft.

Clay County: Akin & Dimock's Stephenson 3, 200 ft snl and 700 ft from se line blk 55, Specht-McCutchen sur, pump 10 bbls, 1139-49 ft, td 1176 ft.

Akin & Dimock's Stephenson 4, 450 ft snl and 450 ft from se line blk 55, abnd 1170 ft.

Clay County—Joy: Magnolia's Ford 1, 660 ft out swc blk 23, H. Williams sur, Home Creek 1255 ft, Ranger 1650 ft, abnd in Strawn water 4043 ft.

Jack County—Hoefle: Standard of Texas-Hanlon-Buchanan's Moore 2, 4200 ft ewl and 467 ft snl J. B. Jackson sur, A 1918, Bend 4862 ft, abnd 4981 ft.

Jack County: Chas. H. Kadane et al's Carter-Shell 5, 1060 ft snl and 200 ft ewl T&EL 3311, abnd 290 ft.

A. C. Parks et al's Coates 1-A, 467 ft ewl and 853 ft, snl of e-110 of w-150 of 200-ac tr, W. Berryman sur, A 40, pump 3 bbls 473-81 ft, td 539 ft.

C. H. Peterson et al's Sewell 2, 450 ft wel and 1300 ft nsl blk 5, J. B. Irvine sur, A 312, abnd 351 ft.

Montague County—Bowers: Rogers Bros. Dr. Co.'s Glass 2, 467 ft nsl and 1263 ft wel of n-106.6-ac tr, J. Woodruff sur, abnd 3147 ft.

Wichita County—K-M-A: Grace & Grace's Dorris 5, 5600 ft snl and 800 ft ewl J. R. Burris sur, pump 43 bbls, shot 200 qts 4035-4120 ft, td 4144 ft.

Wichita County: Ernest Prod. Co.'s Warren 1-A, 660 ft wel and 330 ft nsl W. J. Smith sur, A 678, abnd 1477 ft.

Coppock & Coleman's Kemp & Kempner 1-D, 1535 ft nsl and 330 ft ewl blk 47, KWVFL, abnd 1793 ft.

Paradise Oil Co.'s Waggoner Est. 1-D, 1440 ft nsl and 886 ft ewl HT&B 14, A 505, jkd 1899 ft.

Wilbarger County: C. B. Christie et al's McCrary 2, 1800 ft nsl and 1650 ft wel H&TC 64, blk 14, pump 90 bbls, 1486-96 ft.

Young County — Garvey: Kerlyn-Phillips' Morrison-Gillie 1, 825 ft ewl and 528 ft nsl s-130 ac of se¼ GB&N-S, Davidson 1, A 84, Bend 4270 ft, flow 447 bbls, ¼-in, acid 1000 gals, perf 4265-70 ft, td 4309 ft.

Young County: T. D. Humphrey et al's Steele 2, 1650 ft nsl and 2310 ft ewl BS&F A 42, abnd 2260 ft.

Henry Zweifel et al's Holman 2, J. M. Rodgers A 1878, Bend 3899 ft, abnd 4556 ft.

Young County—Williamson: Elmer J. Boeseke Jr.'s (was T. D. Humphrey) Williamson 3, 1372 ft snl and 1310 ft wel TE&L 601, Bend 3967 ft, Mississippi 4979 ft, pump 90 bbls oil, 20 wtr, acid 1000 gals 4986-94 ft.

NORTH TEXAS WELL DEEPENED

Young County: C. E. Knox et al's Taylor 5-A, TE&L 3407, otd 4145 ft, pump 12 bbls, acid 3000 gals, perf in original pay 4135-45 ft, td 4818 ft.

NORTH TEXAS WILDCATS

Archer County—Failure: Chas. E. Morrison et al's Strange 1, 1236 ft snl and 864 ft ewl sec 47, blk 5, Clark-Plumb sur, abnd 1232 ft.

Wilbarger County—Oil Discovery: British-American Oil Prod. Co.'s Wilkinson 1, 990 ft nsl and 330 ft ewl sec 103, Waggoner Colony subdiv, 6¼ mi ne Harrell pool, nearest production, Noble lime 3010 ft, Strawn 4385 ft, Mississippi 5871 ft, pump and flowed 75 bbls 39.9-gr, acid 4500 gals perf 5780-90 and 5845-63 ft, td 6133 ft.

Young County—Failure: Mudge Oil Co.'s Davidson 1, 467 ft out sec TE&L 272, Bend 3901 ft, Barnett 4790 ft, Miss 4861 ft, abnd 4951 ft.

NORTH TEXAS WILDCAT DEEPENED

Wichita County—Failure: Norberg et al's (was O. H. Hammer) Hamilton 1, c sw nw H&TC 22, blk 7, otd 2100 ft, K-M-A lime 3870 ft, Bend 4107 ft, Barnett 4504 ft, abnd 4506 ft.

EAST TEXAS

Anderson County—Cayuga: Tide Water Associated-Seaboard's Harton 5-A, 467 ft out nwc 82.45-ac lse, S. Edmondson sur, Woodbine 3820 ft, flow 62 bbls, gas-oil ratio 257/1, 1/8-in, perf 4017-20 ft, td 4072 ft.

Wood County—Quitman: Amerada et al's White 2, 660 ft from m/w/w and 1780 ft from m/w/s lines 255.31-ac lse, S. G. Purse sur, elev 455 ft, Paluxy series 6274 ft, flow 681 bbls, ¼-in, perf 6292-6345 ft, td 6350 ft.

Barnsdall Oil Co.'s Blalock 1, 660 ft ewl and 629 ft from n and s lines 40.02-ac lse, S. G. Purse sur, elev 453 ft, top Paluxy series 6254 ft, flow 616 bbls, ¼-in, perf 6254-6315 ft, td 6341 ft.

Cass County—Kildare: C. H. Lyons' Wilson 1, Hopson sur, perf 6003-06, 3000 gals acid, flow 55 bbls oil 8 hrs, ¼-in, 6067 ft.

EAST TEXAS WILDCAT

Panola County — Discovery: Union Producing Co.'s Black 1, Black sur, elev 241 ft, perf Pettit lime 5695-5715 ft, open flow, 83,000,000 gas, spray distillate, 6576 ft.

WEST TEXAS

Andrews County—Fullerton: Fullerton Oil Co.'s Jackson 1, c se ne PSL 17, blk A-32, flow 2624 bbls, 1½-in, acid 16,000 gals Clear Fork 6799-7270 ft.

Cochran County—Slaughter: Devonian et al's Duggan 32-A, 510 ft out nwc lab 7, leag 55, Oldham CSL, flow 1043 bbls, 2½-in, acid 12,000 gals 4988-5038 ft.

Devonian et al's Duggan 21-B, 510 ft out sec lab 22, leag 55, Oldham CSL, flow 204 bbls 2½-in, acid 10,000 gals 5037-61 ft.

Gaines County—Wasson: Amerada's Cox 2, 555 ft snl and 1875 ft ewl lse, sec 380, blk G, flow 513 bbls, ½-in, acid 5000 gals 4912-55 ft.

Oil Development Co.'s Willard 2-39, 515 ft snl and 666 ft wel PSL 39, blk AX, flow 788 bbls, 7/8-in, acid 14,000 gals, 4990-5050 ft.

Hockley County — Slaughter: Texas Co.'s Slaughter 140, 510 ft out sec lab 68, leag 40, Maverick CSL, flow 1896 bbls, cas, acid 13,836 gals 4875-5051 ft.

Terry County—Slaughter: Humble's Coons 7, 7293 ft snl and 2021 ft ewl PSL 11, blk X, flow 1407 bbls, 2-in, acid 10,000 gals 4990-5033 ft, td 5040 ft.

Winkler County—Emperor: Skelly's Halley 57, ne nw ne PSL 13, blk B-12, flow 989 bbls, 2-in, shot 275 qts 2716-2849 ft, td 2875 ft.

Yoakum County—Wasson: DeKalb Agricultural Assn's Armstrong-Humble 7, 500 ft nsl and 555 ft ewl PSL 28, blk C-35, elev 3521 ft, abnd 5089 ft.

DeKalb's Armstrong-Humble 9, 776 ft wel and 1875 ft snl sec 889, abnd 5125 ft.

DeKalb's Armstrong-Humble 10, 2085 ft nsl, 767 ft wel sec 889, abnd 610 ft.

Drilling & Exploration's Tannehill 1-A, c ne ne sec 774, pump 192 bbls, plus 15% water, acid 12,000 gals, shot 400 qts nitro 5100-5229 ft, td 5245 ft.

WEST TEXAS WILDCATS

Crockett County—Failure: Moore Exploration Co.-Olson Oil Co.'s Halff 2, 660 ft out nec I&GN 64, blk 1, abnd 1874 ft.

Sterling County—Failure: B. C. Mann et al's Atkinson 1, c nw se H&TC 122, blk 6, elev 2425 ft, Blaine 1683 ft, San Angelo sand 1953 ft, abnd 2500 ft.

Ward County—Failure: Phillips' University 1-B, c nw nw sec 28, blk 16, elev 2652 ft, Rustler 1835 ft, cem 9⅝ 3540 ft, temp abnd acct near air base, td 5020 ft.

WEST CENTRAL TEXAS

Jones County—West Avoca: M. J. Delaney's Jones-Stasney 1, sw nw se BBB&C 191, pump 56 bbls oil, 16 water, Palo Pinto lime 3252-55 ft.

Jones County — South Noodle: Humble's Huddleston 2-C, 523 ft nsl and 467 ft wel ne T&P 33, blk 18, pump 70 bbls, acid 8000 gals 2441-45 ft.

Jones County — Strand: S. B. Roberts & Fain-McGaha's Stroud 2, 510 ft out sec nw sw H&TC 5, blk 5, abnd 3502 ft.

Shackelford County: Daniels & Pardue's Davis 1-B, 330 ft s and e of swc of n-116-ac of e½ E.T. Ry. sec 219, pump 15 bbls, shot 30 qts 1603-11 ft, td 1614 ft.

WEST CENTRAL TEXAS WILDCATS

Brown County—Failure: Central Texas Gas Co.'s Newsom 1, 660 ft out sec J. J. Cox sur 38, A216, Marble Falls 1856 ft, abnd 1975 ft.

Callahan County—Failure: L. A. Warren et al's Hatchett 1, 2200 ft wel and 50 ft snl nw¼ 24, D&DA 24, abnd 836 ft.

Stephens County—Oil Discovery: Ben F. Read, trustee's Corbett 1, 600 ft out nwc TE&L 1092, elev 1217 ft, Palo Pinto 1220 ft, Bend 3380 ft, Marble Falls 3900 ft, Miss 4153 ft, flow 868 bbls 43-gr, gas-oil ratio 200/1, 2-in, Marble Falls perforations 3950-51 ft, td 4242 ft.

Taylor County—Failure: Butler-Horne-Sandy Ridge Oil Corp. et al's Moore 1, 7450 ft nsl and 467 ft ewl D. T. Bruce 135, elev 1711 ft, abnd 2240 ft.

TEXAS PANHANDLE

Gray County: Cities Service's Noel 7, nw sw se I&GN 151, blk 3, pump 111 bbls, shot 165 qts 3160-3250 ft.

Hutchinson County: J. M. Huber Corp.'s Bryan 9, 330 ft s and 330 ft e swc D&P 4, blk R-2, but in TC 2, blk M-24, pump 132 bbls, lime 3252-65 ft.

LOWER TEXAS COAST

Jackson County — North LaWard: Sun's Hackbarth 1, 6810 ft fr el, 489 ft fr n&sl's 245-ac tr, Patrick Scott sur, A 69, 5½-in 5224 ft, perf 5220-23 ft, flow 49 bbls, 7/64-in, td 5224 ft.

Jim Wells County—Gallagher: M. M. Miller & Sons' Gallagher 5, 576 ft fr nel, 1016 ft fr nwl blk 20, J. H. Gallagher subdvn, Casa Blanca gr, abnd 5170 ft.

Karnes County—Hobson: Seaboard's Pluezkhan 2, 500 ft fr n&el 114-ac tr, Don Erasmo Seguin gr, 5½-in 4031 ft, perf 4025-30 ft, flow 195 bbls, ¼-in, td 4031 ft.

Kleberg County—Stratton: Humble's King Ranch-Paso Ancho 28, 1980 ft wnw'ly alg nl Santa Gertrudis gr, fr ne cor Philip Wardner 1379-ac tr, 5½-in 6563 ft, flow 18 bbls, 1/16-in, td 6574 ft.

Nueces County—East White Point: Sinclair's State-Nueces Bay 2 (975), 2825 ft fr sl, 330 ft fr el 174-ac tr, 7-in 5892 ft, perf 5814-22 ft, flow 101 bbls, ⅛-in, td 6424 ft.

LOWER TEXAS COAST NEW PAY

Kleberg County—Seeligson: Humble's King Ranch-Cabeza 7, 2802 ft fr n'ly nl SK&K 181, 5½-in 6948 ft, flow 51 bbls dist, 1,815,000 gas, ⅛-in, td 6948 ft.

LOWER TEXAS COAST EXTENSION

DeWitt County — Nordheim: Tide Water, Adams and Seaboard's Gips 2, 3055 ft fr nel, 1248 ft fr nwl 412-ac lse, Willis Moore sur, A 656, 2640 ft sw Gips 1 discovery, perf 7161-71 ft, flow 81 bbls dist, 3,200,000 gas, ¼-in, td 7180 ft.

LOWER TEXAS COAST WILDCAT

Jackson County—Failure: Stanolind's Wearden 1, core test, 467 ft fr wl, 2100 ft fr sl James Williams sur, A 267, 600-ac lse, abnd 5300 ft.

SOUTHWEST TEXAS

Duval County — Government Wells: Magnolia's Duval County Ranch 50, 660 ft fr wl, 1321 ft fr nl J. Poitevent sur 209, A 922, 1044 ft nw No. 40, 480-ac lse, 6⅝-in 2314 ft, pump 82 bbls, td 2316 ft.

Duvan County — Cadena: Taylor Refining Co.'s Cadena 4, 1682 ft fr wl, 2200 ft fr sl Calientano Rios sur 304, A 1026, abnd 5440 ft.

LaSalle County — Washburn: Quintana's South Texas Syndicate 23, 370 ft fr wl, 600 ft fr sl H&GN 68, A 1311, 5½-in 5512 ft, pay 5512 ft, flow 257 bbls, ¼-in, td 5543 ft.

Starr County—Rincon: Continental's Garcia 5-D, 2310 ft fr sl, 992 ft fr el W. D. Stephenson sur 907, 1074-ac lse, 6-in 3892 ft, sand 3860 ft, flow 128 bbls, 3/16-in, td 3892 ft.

Webb County—Dulup: George Buck and J. W. Abel's Puig 1, 330 ft fr wl, 400 ft fr sl blk 59, Edington Mineral subdivision 2, Las Albercas de Arriba gr, abnd 1863 ft.

SOUTHWEST TEXAS EXTENSION

Duval County — Sejita: Cox & Hamon's Dickey 1, 660 ft fr nl, 4100 ft fr el 791-ac lse, blk 6, sec 27, San Pedro de Charco Redondo gr, 5½-in 5805 ft, pay 5797 ft, perf 5800-04 ft, flow 99 bbls, ⅛-in, td 5805 ft, extends production 6000 ft se west flank.

SOUTHWEST TEXAS WILDCAT

Duval County — Failure: Cox & Hamon's Hoffman 1-B, 1977 ft fr nwl, 2002 ft fr swl BS&F 122, A 1275, 1300-ac lse, 2 mi sw Tarancahuas field, abnd 3503 ft.

TEXAS GULF COAST

Harris County—Webster: Humble's Beamer 27, 1482 ft fr ne, 1273 ft se Beamer 29, 933-ac lse, Thomas Choate sur, A 12, 5½-in 5878 ft, sand 5682 ft, flow 635 bbls, ¼-in, td 6042 ft.

Jefferson County—Stowell: Glenn H. McCarthy and Brown & Wheeler's Crawford 1, 161-ac tr, T&NO 161, dual completion, perf 8966-84 ft, flow 178 bbls, 13/64-in, perf 8648-59 ft, flow 176 bbls 10/64-in, td 9055 ft.

San Jacinto County—Mercy: Shell's Robinson Unit 1, start s cor K. Holliday sur, go 250 ft ne alg nwl sur & 660 ft se at ra in Robinson sur, 5½-in 8288 ft, open hole 8288-8315 ft, flow 179 bbls, ⅛-in, td 8315 ft.

TEXAS GULF COAST WILDCATS

Fort Bend County—Failure: Phillips' Robinson 2, 293-ac tr, Duff & Robinson subdvn Hicks & Shropshire sur, lot 16, Blue Ridge area, abnd 3786 ft.

Hardin County—Failure: H. B. Hebert and John B. Cowden's Sternenberg 1, Kountze area, Hiram Barber sur, abnd 7755 ft.

Matagorda County—Failure: Stanolind's Pybus 1, 194-ac tr, G. W. Nexsen sur, abnd 9043 ft.

TEXAS GULF COAST EXTENSION

Harris County—Alief: Cities Service Witcher 1, 696-ac tr, blk 6, Mrs. Chris Williams sur, 3716 ft ne Alief dist discovery, perf 7926½-28½ ft, flow 40 bbls 36.4-gr, 7/64-in, td 8708 ft. Opens oil production.

Save-Power Posters

Ingersoll-Rand Company, 11 Broadway, New York, has issued a new series of industrial posters designed to conserve power and speed production by waging war on leaky hose couplings, valves, and other leaky pipe fittings.

In several of the posters both the "right way and the wrong way" are graphically illustrated. Five posters are available at this time.

United States Wildcat Starts

CALIFORNIA

Kern County: Kern Front Drilling Co.'s U.S. 1, se sw sw 10-28-27, Kern Front area, lcn.

Richfield's Tejon 4, sw se ne 34-11-19, Grapevine area, dr.

C. L. Zastrow Oil Co.'s 38-16, sw se sw 16-30-29, Edison area, lcn.

Los Angeles County: P. M. Girard's Fisher-Wosk 1, ne se ne 6-3-16, southeast Newhall-Potrero area, lcn.

San Joaquin County: Amerada's Comm. 7-1, se nw nw 7-4-7, Lodi area, lcn.

Santa Barbara County: O. C. Fields Gasoline Co.'s Arellanes 1-F, 13-9-35, Casmalia area, rig.

Union's Sisquoc 1, 31-9-31, Tinaquaic area, lcn.

ILLINOIS

Clay County: K. W. Kilpatrick et al's Williams 1, ne se nw 20-5n-5e, dr.

E. P. Corley's Pimberton 1, ne nw sw 28-5n-5e, lcn.

Coles County: Anthon F. Keating's Uphoff 1, se nw nw 25-12n-7e, dr.

Effingham County: Carl Robinson's Barnick 1, ne nw 36-6n-6e, lcn.

Jasper County: Ohio's Conrad 1, c sw sw 15-5n-11w, lcn.

Jefferson County: Magnolia's Badgett 1, sw ne ne 18-3s-3e, lcn.

Marion County: Burgendthal et al's Sloan 1, ne nw sw 12-3n-1e, lcn.

Saline County: Herndon Drlg Co.'s Busler 1, nw ne nw 28-7s-6e, lcn.

INDIANA

Posey County: S. C. Yingling's 1, se nw se 21-6s-12w, lcn.

Sullivan County: Ohio's Shirley Realty 1, ne se nw 22-9n-9w, lcn.

Vanderburg County: W. F. Lacey et al's Fiekas 1, sw sw nw 11-7s-10w, lcn.

KANSAS

Barton County: Herbert Gussman's Ruscoe 1, nwc 16-19s-12w, c&p.

National Refining Co. Phillips' Panne 1, ne nw ne 25-19s-13w, lcn.

Brown County: Gall & Towle's Allerton 1, c sw ne 26-1s-16e, dr.

Cowley County: Northern Ordnance's Lewis 1, nec sw 36-31s-5e, ru mch.

Ellis County: Coralena Oil Co.'s Glathart 1, sec 16-12s-19w, mirt.

Graham County: Hollow Drlg Co.'s Alexander-Sayres 1, sw se sw 16-8s-21w, dr.

Hollow Drlg Co.'s Fesler 1, nwc 25-9s-21w, c&p.

W. S. Broderick's Sharp 1, nwc 15-9s-23w, dr.

McPherson County: J. J. Davis et al's Douglas 1, c n½ nw nw 20-17s-5w, dr.

Morris County: Derby et al's Glantz 1, sw nw se 30-16s-5e, mim.

Pratt County: Shell's Gereke 1, se ne sw 6-26s-14w, dr.

Reno County: Phillips' Manning 1, swc nw 34-25s-4w, cellar.

Rice County: Max Steinbushel's Dinsmore 1, swc ne 36-19s-9w, rust.

Rush County: Falcon-Seaboard's Urban 1, se ne se 19-16s-17w, wort.

Phillip's Pechanec 1, c se sw 18-18s-16w, dr.

Russell County: Nadel & Gussman's Sebesta 1, swc se 35-15s-11w, dr.

Century Oil Co.'s Janne 1, swc se 13-15s-12w, c&p.

Saline County: Ingling & Parker et al's Reiff 1, c s½ se se 10-15s-2w, dr.

Sedgwick County: Continental's Mannebach 1, nec 16-26s-2w, lcn.

KENTUCKY

Union County: Cal Star Pet Co.'s Mason et al 1, 17-P-20, dr.

NORTH LOUISIANA

Bossier Parish: Carter's Bolinger 1, se nw 20-22n-11w, dk.

A. D. Simpson et al's Fenet 1, nw sw ne 25-21n-14w, dr.

Shell's Bolinger 1, sw sw 2-23n-12w, mim.

Catahoula Parish: R. M. Edward's Louisiana Central 1, nw nw sw 23-9n-5e, lcn.

Sinclair Prairie's State 1, nw se 30-9n-7e, sd acct high water.

Concordia Parish: Gulf et al's York 1 (H. G. Nelms), sw ne 10-1n-8e, lcn under water.

LaSalle Parish: George H. Echols' Echols-Kendrick 1, ne se 7-7n-4e, lcn.

Rapides Parish: Moran Oil Co.'s Meeker 1, 6-1n-1e, lcn.

Red River Parish: C. C. Lowery's Christopher A-1, sw sw 16-13n-10w, dr.

Webster Parish: Ohio's Gleason 1, nw nw 31-22n-9w, mim.

J. I. Roberts et al's Garland 1, ne se 24-22n-9w, lcn.

SOUTH LOUISIANA

Cameron Parish: Magnolia's Moore 1, South Gum Cove area, 330 ft n&e swc ne nw 13-12s-12w, lcn.

Rapides Parish: Moran Oil Co.'s Meeker 1, 2975 ft n, 4430 ft w of most w'ly swc 6-1n-1e, Wilcox test.

MICHIGAN

Allegan County: S. L. Findley's Mineager 1, sw se se 24-3n-14w, rig.

Arenac County: C. W. Teater's Buffalo 1, s¼ se se 23-18n-4e, dr.

Bay County: Ervin Major's Sivier 1, sw ne 1-18n-3e, dr.

Clare County: C. W. Teater's Gilmore 1, s½ se se 14-18n-6w, dr.

Kent County: Smith Pet. Co.'s Brown 1, se ne sw 27-5n-11w, rig.

Montcalm County: American Prod. Co.'s Bentley 1, se se ne 28-11n-7w, dr.

Muskegon County: Muskegon Dev. Co.'s Rupar 1, nw nw 2-12n-15w, rig.

Osceola County: P. J. Bolger's Carlson 1, s½ sw se 26-19n-10w, lcn.

Wexford County: Midwest Refineries, Inc.'s Wait 1, s½ sw ne, 29-21n-11w, rig.

MISSISSIPPI

Jefferson County: Gulf's Osborne 1, ne nw 19-8n-4e, lcn.

Jones County: Sinclair-Wyoming's Wausau 2, s½ nw 25-8n-10w, lcn.

NEW MEXICO

Chaves County: DeKalb Agricultural Assn's White 1, c nw sw 35-10s-28e, mim for 7500-ft test.

Nay Hightower et al's C. F. Waller-Cornell University 1, c se nw 33-12s-28e, bldg road for 6000-ft test.

OKLAHOMA

Creek County: Dunn & Miller's Beartail 1, se se sw 36-19n-7e, rust.

Grady County: Ray Stephens' Johnson A-1, nw ne nw 18-5n-8w, dr.

Grant County: Barnsdall's Bolderston 1, ne sw se 24-28n-3w, br.

Hughes County: Crum & Bartlett's Fream 1, se ne 27-7n-8e, dr.

Kay County: Alladan's School 1, ne se sw 16-29n-3e, woc.

Lincoln County: J. E. Crosbie's Quinlan 1, sw ne sw 26-12n-3e, lcn.

Wilcox O&G Co.'s Kolar 1, nw sw 5-12n-6e, dr.

Okfuskee County: Wood's Turner 1, se se nw 9-11n-11e, dr.

Pawnee County: Watchorn O&G Co.'s Laird 1, swc 2-22n-3e, rig.

Jack Shaffer's Rogers 1, nw nw nw 13-22n-4e, lcn.

Pottawatomie County: Cities Service's Lamfrand 1, ne se sw 27-6n-2e, dr.

Atlantic's Chilcoat 1, se nw se 10-9n-4e, dr.

Stanolind's Hood 1, nw nw nw 9-11n-2e, c&p.

Stephens County: Lundy & McCasland's Cannon 1, sw nw se 14-1n-6w, lcn.

NORTH TEXAS

Archer County: Chapman & McFarlin's Turbeville 1, 495 ft snl and 2130 ft ewl T. P. Glass sur, A 141, lcn 5000-ft test.

S. H. Fagadau et al's Abercrombie 1, 1570 ft nsl and 250 ft ewl Sec 152, John W. Harris subdiv, lcn 1250-ft test.

C. Y. Gorman et al's Abercrombie 1, 550 ft

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nsl and 2250 ft ewl Sec 109, John W. Harris subdiv., lcn 1800-ft test.

Shapell Oil Co.'s Seay 1, 1493 ft snl and 1542 ft ewl Sec 107, John W. Harris subdiv, lcn 1500-ft test.

Cooke County: Texas Co.'s Townsley 1, 330 ft out NEc blk 4, Wm. L. Ingland sur, cem sur pipe.

Haskell County: Humble's Berry 1, 660 ft out nec 607-ac tr, B. F. Woods sur, 8 mi e by n Pardue pool, lcn 3500-ft test.

Throckmorton County: T. S. Stanfield et al's Daws 1, 660 ft nsl and 220 ft ewl ne¼ TE&L 932, lcn.

Bruce Sullivan and Anderson-Prichard's Waggoner 1, 330 ft snl and 1536 ft wel TE&L 775, lcn 5000-ft test.

EAST TEXAS

Franklin County: Humble's Hague 1, 4850 ft nsl and 1900 ft ewl Joseph B. Riddle sur, 1½ mi sw Winfield, mim for Travis Peak test.

Freestone County: R. L. Wheelock et al's Hill 1, 1980 ft nsl and 4400 ft ewl Hugh S. Shepherd sur, lcn Woodbine test.

Limestone County: H. H. Wegener et al's Simms 1, 330 ft from ne and 2310 ft from nw lines sec 24, J. L. Chavert sur, mi for 2000-ft test.

TEXAS PANHANDLE

Donley County: Shamrock O&G Corp.'s Adair-Texaco 1, 1000 ft from m/s/n and 1000 ft from m/w/w lines of sec 15, Blk A, J. G. Adair sur, 8½ mi s by w Clarendon, lcn 7500-foot test.

Parmer County: Stanolind's A. J. Jarrell 1, c ne ne sec 19, blk B, Capital Syndicate Survey, 2 mi nw Bovina, lcn 6000-ft Ellenburger test.

Sherman County: L. H. Puckett et al's Seely Est. 1, c sw sw H&TC 413, blk I-T, lcn.

TEXAS GULF COAST

Jefferson County: Sun's Quinn 1, ne Baumont, lots 159 and 160 Meentzen Ruthers subdvn, H. B. Savery Lge, lcn.

LOWER TEXAS COAST

Hidalgo County: Seaboard's Boston-Texas Land 2, 6200 ft fr el, 16,400 ft fr sl 22,469-ac lse, Los Maguelles grant, 9 mi e Rincon field, lcn 7500-ft test.

Jackson County: Continental's Weeks 1, East Edna area, 1613 ft fr nel, 2098 ft fr nwl lot 9, J. W. Weeks subdvn, W. J. E. Heard sur, A 31, drilling.

Karnes County: Sunray & Superior's Discher 1, 1809 ft fr swl, 2286 ft fr sel 1037-ac tr 500-ac lse, 2 mi ne Hondo Creek, rigging.

Live Oak County: Argo Oil Corp.'s Schwartz 1, 660 ft fr nel, 2205 ft fr nwl John McMullen sur, A 30, 4 mi Mt. Lucas, lcn.

SOUTH CENTRAL TEXAS

Dimmitt County: W. J. Walton and Freeman Galt's Frost 1, 330 ft fr s, 1650 ft fr wl 1037-ac tr sur 529, lcn 3500-ft test.

WEST TEXAS

Garza County: E. M. Wahlenmaier et al's Price 1, c se se T T 1116, blk D-15, lcn 4200-ft test.

Hockley County: Globe O&R Co.'s Ellwood 1, 580 ft out nec lab 8, leag 6, Wilbarger CSL, dk 6200-ft test.

Pecos County: Siemoneit Dr. Co.-E. M. Wahlenmaier's Crockett-Shell 1, c w¼ of w¼ H&TC 28, blk 2, lcn 6000-ft Ellenburger test.

Yoakum County: Texas Co.'s Miller 1, c nw nw sec 198, blk D, J. H. Gibson sur, lcn.

WEST CENTRAL TEXAS

Coleman County: Ohio Producing Co.'s Sealy-Smith 1, c sw nw GH&H 95, blk 2, lcn 3500-ft test.

Jones County: Great Lakes Carbon Corp.'s C. N. Humphrey, 1660 ft out swc 410-ac tr, H&TC 2, blk 4, lcn 3600-ft test.

Taylor County: B. & W. Oil Co.'s Norwood 1, c nw ne sec 59, Blind Asylum Lands, lcn 3500-ft test.

R. H. Roark et al's Jones 1, 440 ft nsl and 2411 ft ewl lot 6, leag 144, Guadalupe CSL sur, lcn 2000-ft test.

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are more widely used on pump suctions than any other connection. There must be a reason!

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HOUSTON

Squeaks from the Bull Wheel

More Discipline

"Things look much better in this town," said the traveling man. "Seems to be some law and order here now."

"Yes," nodded the postmaster. "Since our sheriff joined the Navy his wife's been taking his place."

Nothin' Else But

They sat on the beach. Her hair caressed his face. Her head rested on his shoulders. Her lips looked down on his. Finally she murmured, "Why don't you kiss me?"

"I can't," he said, "some sand got in my mouth."

"Swallow it, boy, swallow it," she said. "If anybody ever had need of sand, you certainly are the guy."

Another Talking Horse Story

A couple of friends made a deal that if either one died he would let his pal know if he could communicate with him. One of them did pass on, and for years no message reached across the unknown, but finally one day, when the survivor was walking along the street, he heard a voice call, "Hey, Joe."

Looking around, he could see nothing but a wornout horse hitched to an ice wagon.

The horse eyed him mournfully and repeated "Hey, Joe."

"Holy cat," exclaimed Joe, "you don't mean to tell me you came back to earth like that?"

The horse nodded and a tear trickled from its eye.

"Don't they treat you right?" asked Joe. "Give you plenty to eat, and all?"

The horse shook its head.

"I'll fix the soansos," declared the surviving friend. "I'll tell your boss we were pals. I'll make him—"

"Gee, no, Joe," begged the equine companion. "If he finds out I can talk, he'll make me go along the street hollering 'Ice'."

Talking Dog

"I've got this race in the bag," declared the first horse. "Nonsense! I'm in rare form today," replied the second nag. Just then a dog trotted by. "Listen, fellas," said the dog. "I don't think either of you will win." The horses looked up in amazement. "Look!" said the first horse, "A talking dog!"

Right Proportion

"Are these half dozen rings all you have in stock? Why, you have a whole trayful of engagement rings over there"

"Yes, sir, but it'll take that whole trayful of engagement rings to work off those half dozen wedding rings."

Progress

"I am Brave Eagle," said the Indian chieftain, introducing himself to the paleface visitor. "This is my son, Fighting Bird.

"And here," he added, "is my grandson, Four-Engined Bomber."

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Notes for the Equipment Buyer and User

Sheffield Steel Corporation's Houston Capacity Grows Rapidly

Another milestone in the development of the steel industry in Texas was passed when a new open hearth furnace was put into operation by Sheffield Steel Corporation at Houston. This furnace adds about 72,000 net tons of steel production to the company's annual capacity of approximately 200,000 net tons.

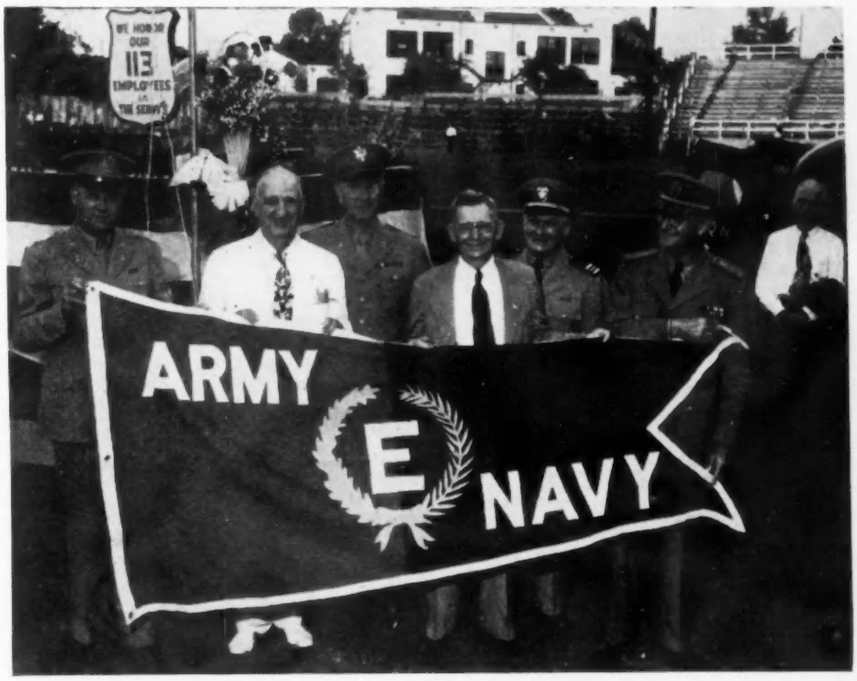
This is the first unit to go into operation as a result of the additional plant facilities now under construction by Defense Plant Corporation. For more than a year, work has been progressing on the expansion program made necessary by the war requirements and approved by WPB in January, 1942. The expanded facilities are being built by Defense Plant Corporation and are to be operated by Sheffield Steel Corporation in connection with its plant, which poured its first steel in April, 1942.

In addition, another open-hearth furnace, a blast furnace and coke ovens, a blooming mill, and an additional plate mill are included in this new construction. All these units will be coming into operation between now and the fourth quarter of this year. Then the entire additional facilities will be in full operation, which will more than double the steel-making capacity of the original plant.

The finished products resulting from this expansion will be plates and shell steel; the former to be used in the construction of ships in Gulf Coast shipyards and the latter to be used in the manufacture of shells in Texas shell plants. At present the plant makes rolled structural steel, angles, beams and channels, hot rolled plates, merchant bars and shapes, reinforcing bars and special wire products.

In April, 1941, construction was started on the original plant, which was put into operation just one year later in April, 1942. For over a year now, this plant has been in full operation and at the present time employs about 1500 people.

During this period, the plant has operated as a wholly-owned subsidiary of The American Rolling Mill Company under the name of Sheffield Steel Corporation of Texas. The officers and men directly in charge of the operation and policies of the company are as follows: R. L. Gray, president and general manager; J. C. Shepherd, executive vice president; L. L. Middleton, vice president in charge of purchases; J. W. Anderson, vice president in charge of sales; H. O. McAninch, assistant to president; L. H. Juengling, secretary-treasurer; R. H. Startzell, sales manager, and W. S. Newell, assistant sales manager.



The Army-Navy "E" was awarded to Lufkin Foundry & Machine Company at a ceremony Thursday, June 24. The program was carried over a Texas radio network.

Those participating in the ceremony included Rear Admiral Percy W. Foote, USN (Retired), inspector of naval materials; Col. Merle H. Davis, district chief, St. Louis Ordnance District; Hubert M. Harrison, vice president and general manager, East Texas Chamber of Commerce; Walter C. Trout, president of Lufkin Foundry & Machine Company, who accepted the pennant, and Warden Ragland, who accepted the "E" pins as spokesman for the workers.

The photo shows company representatives receiving the pennant. Left to right: Col. Davis, Trout, Capt. George C. McDonald, Ragland, Comdr. James M. Clark, Rear Admiral Foote. In the back-ground is Russell E. Gardner, Jr., deputy district chief, St. Louis Ordnance District.

New Bovaird Supply Store At Pratt, Kansas

Bovaird Supply Company, Tulsa, has opened a new store at Pratt, Kansas. The store will be managed by Warren J. Miller, former manager at Hutchinson, and will carry a complete stock of oil field equipment. This will make the fourth Bovaird store to be located in Kansas, the others being at Chase, McPherson and Russell, with a district office at Wichita.

Batteries

Ideal Commutator Dresser Company, 1525 Park Avenue, Sycamore, Illinois, has published a new bulletin describing its line of storage flashlight batteries and charging equipment for these batteries. These batteries fit all popular two-cell, 1-1¼-inch size D flashlight cases, and can be re-charged whenever necessary. Special charging apparatus can be plugged into an ordinary light socket.

J. B. Reilly Elected to Rotary International Board

J. B. Reilly, president of Fluid Packed Pump Company, was recently elected a board member of Rotary International at the club's annual convention held in St. Louis.

A pioneer oil man, Reilly was reared in the California fields and has been in the oil tool business all his life. He has held many responsible local and district positions in Rotary, and his elevation to International Board member climaxes many years of untiring effort in furthering the club's interests.

J. B. REILLY

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By PHILIP B. KING

Geologist, Geological Survey, United States Department of the Interior, Washington, D. C.

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FOREWORD BY RONALD K. DeFORD AND E. RUSSELL LLOYD

CONTENTS

Chapter One—Introduction
Chapter Two—Guadalupe Mountains Section
Chapter Three—Sedimentation and Tectonics in Guadalupe Mountains Region
Chapter Four—Glass Mountains Section
Chapter Five—Regional Correlations
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Men in the Industry's News

H. H. ROSS, former president of Industrial Gas Corporation, has been named operating manager for Oklahoma Natural Gas Company, succeeding C. U. Daniels, who will be in charge of leasing, lands and natural gas purchases.

CHARLES R. BIGBIE, an employe of Coline Oil Company, Ardmore, for 19 years, has resigned to accept a position with Douglas Aircraft Company, Oklahoma City.

KARL PROBST, consulting geologist, has returned to Tulsa after working several months in the Chicago office of PAW.

BEN E. HILLIARD has been placed in charge of the New York Export Office of the Oil Tool Division of Byron Jackson Company, 420 Lexington Avenue, New York. Hilliard formerly was in charge of the West Texas and Kansas territories.

WORTH B. ANDREWS, JR., of the Worth B. Andrews Company, oil and mining operators, Fort Worth, has enlisted in the Army and is now in basic training at the Officer Candidate School, Fort Riley, Kansas.

DON C. DAVIS has resigned as district manager for International Derrick & Equipment Company at Ft. Worth, effective July 1.

B. C. COOK has been appointed vice president in charge of advertising, sales promotion and export sales for Elwell-Parker Electric Company, Cleveland, Ohio. He has been a director of the company since 1941 and has been identified with the organization for the past 28 years.

NORMAN CHANDLER, of Los Angeles, has been elected a member of the board of directors of Dresser Manufacturing Company. He is president and general manager of the Los Angeles Times and secretary of the American Newspaper Publishers Association. He is also a director of Pacific Pump Works, Huntington Park, California, one of Dresser's subsidiaries.

R. E. REIMER, Bradford, Pennsylvania, has been elected secretary-treasurer of Dresser Manufacturing Company. He has been with the company since 1929 and has been treasurer since 1932.

J. W. GODDARD, former land man for Sinclair Prairie Oil Company, is now representing Louden Pipe Line Company, in Illinois, Indiana, Kentucky and East Texas.

NATHAN ALTSCHULER, 17-year-old Tulsa Central High School youth, has been granted a scholarship by Tulsa Geological Society study group. He will spend the summer with Princeton University geological field party in Colorado, Wyoming and Montana.

W. H. McKINLEY, formerly a geologist for Gulf Oil Corporation, has been discharged from Army Engineer Corps, and has joined the geological staff of Stanolind Oil & Gas Company, Amarillo, Texas.

D. A. MILLER has been transferred from Ponca City to Oklahoma City as assistant division production superintendent for Phillips Petroleum Company. He succeeds Floyd Stephenson who has been given a commission in the Navy.

R. J. LAUDER has been elected president of the Petroleum Safety Council, which was founded in 1932 and is now recognized as the oldest organization of its kind. Other officers named are: vice president, C. R. Sliger; secretary-treasurer, E. K. Alexander; statistical chairman, H. H. Meyers; publicity chairman, W. J. Overton.

D. T. O'CONNOR now is associated with E. L. Carter, export manager for Shaffer Tool Works, W. C. Norris Manufacturing, Wheatley Brothers Pump and Valve Manufacturers, Tom Wheatley Company and American Machinery Corporation. He formerly was with Lago Petroleum Corporation, Maracaibo, Venezuela, Bahrein Petroleum Company, Bahrein Island, and more recently with Trinidad Leaseholds, Limited, Trinidad.

Advertisers' Index

*Indicates detailed information on products and services included in 1942 edition of Composite Catalog of Oil Field and Pipe-Line Equipment.

American Association of Petroleum Geologists 64
*American Cable Division
American Cast Iron Pipe Co. 53
American Chain & Cable Co. ..... II Cover
*American Sand-Banum Co. 64
Wm. M. Barret, Inc. 61
*The Buda Co. 53
*Cameron Iron Works, Inc. 33
The Continental Supply Co. 31
*Fred E. Cooper 41
Ft. Worth Laboratories 61
Geophysical Service, Inc. 5
*H. P. Gott Manufacturing Co. 62
Gulf Engineering Co. 61
*Halliburton Oil Well Cementing Co. ..... I Cover
Harrison Equipment Co. 61
Hercules Powder Co. 4
Houston Laboratories 61
*Hughes Tool Co. ..... IV Cover
Earl M. Jorgensen Co. 35
M. M. Kinley Co. 44
Lufkin Foundry & Machine Co. 37
*Maloney Tank Mfg. Co. 8
*Mission Manufacturing Co. 55
The National Supply Co. 22-23
New Bedford Cordage Co. 38
*Oil City Brass Works 61
The Oil Well Supply Co. 2-3
*Patterson-Ballagh Corp. 59
*Pelican Well Tool & Supply Co. 64
*Raybestos-Manhattan, Inc. 34
*Reed Roller Bit Co. 25
*Rollway Bearing Co. 1
Roosevelt Hotel 38
*Sperry-Sun Well Surveying Co. 56
*Thornhill-Craver Co. 62
United States Steel Corp. 2-3
*Vickers, Inc. 29
*Wilson Manufacturing Co. ..... III Cover
*Wisconsin Motor Corp. 53
Youngstown Sheet & Tube Co. 6